Appendix C.4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Groundwater
Current Adult Residential Scenario - CT
Southwest Prperties, Wells G&H Superfund Site, Operable Unit 2
Aberjona Auto Parts

ENTER Chemical CAS No. (numbers only, no dashes)	Enter X in appro Chemical	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure time ET (hrs/day)	ENTER Coversion factor CF (hrs/yr)
75354	1,1-Dichloroethylene	0.3	1.0E-06	1	70	7	7	350	16	8760
106467	1,4-Dichlorobenzene	0.3	1.0E-06	1	70	7	7	350	16	8760
71432	Benzene	0.3	1.0E-06	1	70	7	7	350	16	8760
67663	Chloroform	0.3	1.0E-06	1	70	7	7	350	16	8760
156592	cis-1,2-Dichloroethylene	0.3	1.0E-06	1	70	7	7	350	16	8760
127184	Tetrachloroethylene	0.3	1.0E-06	1	70	7	7	350	16	8760
79016	Trichloroethylene	0.3	1.0E-06	1	70	7	7	350	16	8760
75014	Vinyl chloride	0.3	1.0E-06	1	70	7	7	350	16	8760
91203	Naphthalene	0.3	1.0E-06	1	70	7	7	350	16	8760
85018	Phenanthrene	0.3	1.0E-06	1	70	7	7	350	16	8760

1 soil dry bulk density (ρ_b).

Appendix C.4
Johnson & Ettinger Model - Chemical Properties Screen
Inhalation of Volatiles from Groundwater
Current Adult Residential Scenario - CT
Southwest Prperties, Wells G&H Superfund Site, Operable Unit 2
Aberjona Auto Parts

Chemical CAS No.	Chemical	Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
75354	1,1-Dichloroethylene	9.00E-02	1.04E-05	2.61E-02	25	6,247	304.75	576.05	5.89E+01	2.25E+03	N/A	2.0E-01
106467	1,4-Dichlorobenzene	6.90E-02	7.90E-06	2.43E-03	25	9,271	447.21	684.75	6.17E+02	7.38E+01	N/A	8.0E-01
71432	Benzene	8.80E-02	9.80E-06	5.56E-03	25	7,342	353.24	562.16	5.89E+01	1.75E+03	7.8E-06	3.0E-02
67663	Chloroform	1.04E-01	1.00E-05	3.66E-03	25	6,988	334.32	536.40	3.98E+01	7.92E+03	2.3E-05	5.0E-02
156592	cis-1,2-Dichloroethylene	7.36E-02	1.13E-05	4.07E-03	25	7,192	333.65	544.00	3.55E+01	3.50E+03	N/A	2.0E-01
127184	Tetrachloroethylene	7.20E-02	8.20E-06	1.84E-02	25	8,288	394.40	620.20	1.55E+02	2.00E+02	5.9E-06	N/A
79016	Trichloroethylene	7.90E-02	9.10E-06	1.03E-02	25	7,505	360.36	544.20	1.66E+02	1.10E+03	1.1E-04	4.0E-02
75014	Vinyl chloride	1.06E-01	1.23E-05	2.71E-02	25	5,250	259.25	432.00	1.86E+01	2.76E+03	8.8E-06	1.0E-01
91203	Naphthalene	5.90E-02	7.50E-06	4.83E-04	25	10,373	491.14	748.40	2.00E+03	3.10E+01	N/A	3.0E-03
85018	Phenanthrene	3.30E-02	7.47E-06	1.30E-04	25	1,057	613.00	869.01	1.41E+04	1.28E+00	N/A	3.0E-03

Appendix C.4
Johnson & Ettinger Model - Calculations Screen
Inhalation of Volatiles from Groundwater
Current Adult Residential Scenario - CT
Southwest Prperties, Wells G&H Superfund Site, Operable Unit 2
Aberjona Auto Parts

		Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, Xcrack (cm)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
75354	1,1-Dichloroethylene	30.48	0.130	0.659	1.62E-08	0.390	6.33E-09	18.75	0.43	0.127	0.303	4.00E+03	2.54E+04
106467	1,4-Dichlorobenzene	30.48	0.130	0.659	1.62E-08	0.390	6.33E-09	18.75	0.43	0.127	0.303	4.00E+03	2.54E+04
71432	Benzene	30.48	0.130	0.659	1.62E-08	0.390	6.33E-09	18.75	0.43	0.127	0.303	4.00E+03	2.54E+04
67663	Chloroform	30.48	0.130	0.659	1.62E-08	0.390	6.33E-09	18.75	0.43	0.127	0.303	4.00E+03	2.54E+04
156592	cis-1,2-Dichloroethylene	30.48	0.130	0.659	1.62E-08	0.390	6.33E-09	18.75	0.43	0.127	0.303	4.00E+03	2.54E+04
127184	Tetrachloroethylene	30.48	0.130	0.659	1.62E-08	0.390	6.33E-09	18.75	0.43	0.127	0.303	4.00E+03	2.54E+04
79016	Trichloroethylene	30.48	0.130	0.659	1.62E-08	0.390	6.33E-09	18.75	0.43	0.127	0.303	4.00E+03	2.54E+04
75014	Vinyl chloride	30.48	0.130	0.659	1.62E-08	0.390	6.33E-09	18.75	0.43	0.127	0.303	4.00E+03	2.54E+04
91203	Naphthalene	30.48	0.130	0.659	1.62E-08	0.390	6.33E-09	18.75	0.43	0.127	0.303	4.00E+03	2.54E+04
85018	Phenanthrene	30.48	0.130	0.659	1.62E-08	0.390	6.33E-09	18.75	0.43	0.127	0.303	4.00E+03	2.54E+04

Appendix C.4
Johnson & Ettinger Model - Calculations Screen
Inhalation of Volatiles from Groundwater
Current Adult Residential Scenario - CT
Southwest Prperties, Wells G&H Superfund Site, Operable Unit 2
Aberjona Auto Parts

		Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ve. groundwat temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)
75354	1,1-Dichloroethylene	1.80E+06	2.22E-04	52.12	6,392	1.47E-02	6.34E-01	1.75E-04	5.47E-04	5.12E-04	5.25E-04	30.48	52.12	7.42E+01
106467	1,4-Dichlorobenzene	1.80E+06	2.22E-04	52.12	11,243	8.89E-04	3.83E-02	1.75E-04	4.38E-04	4.12E-04	4.22E-04	30.48	52.12	1.64E+01
71432	Benzene	1.80E+06	2.22E-04	52.12	8,122	2.69E-03	1.16E-01	1.75E-04	5.42E-04	5.07E-04	5.20E-04	30.48	52.12	8.68E+00
67663	Chloroform	1.80E+06	2.22E-04	52.12	7,554	1.86E-03	8.02E-02	1.75E-04	6.43E-04	6.02E-04	6.17E-04	30.48	52.12	
156592	cis-1,2-Dichloroethylene	1.80E+06	2.22E-04	52.12	7,734	2.04E-03	8.77E-02	1.75E-04	4.59E-04	4.30E-04	4.41E-04	30.48	52.12	7.02E+02
127184	Tetrachloroethylene	1.80E+06	2.22E-04	52.12	9,553	7.83E-03	3.37E-01	1.75E-04	4.39E-04	4.11E-04	4.21E-04	30.48	52.12	1.41E+02
79016	Trichloroethylene	1.80E+06	2.22E-04	52.12	8,657	4.79E-03	2.06E-01	1.75E-04	4.83E-04	4.52E-04	4.64E-04	30.48	52.12	4.43E+03
75014	Vinyl chloride	1.80E+06	2.22E-04	52.12	5,000	1.73E-02	7.46E-01	1.75E-04	6.44E-04	6.02E-04	6.18E-04	30.48	52.12	1.47E+02
91203	Naphthalene	1.80E+06	2.22E-04	52.12	12,913	1.52E-04	6.55E-03	1.75E-04	4.70E-04	4.50E-04	4.57E-04	30.48	52.12	8.86E+00
85018	Phenanthrene	1.80E+06	2.22E-04	52.12	1,479	1.14E-04	4.90E-03	1.75E-04	3.50E-04	3.41E-04	3.44E-04	30.48	52.12	1.03E+01

Appendix C.4
Johnson & Ettinger Model - Calculations Screen
Inhalation of Volatiles from Groundwater
Current Adult Residential Scenario - CT
Southwest Prperties, Wells G&H Superfund Site, Operable Unit 2
Aberjona Auto Parts

		Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
75354	1,1-Dichloroethylene	0.10	5.22E+00	6.47E-04	4.00E+02	3.87E+155	1.76E-04	1.31E-02	N/A	2.0E-01
106467	1,4-Dichlorobenzene	0.10	5.22E+00	4.38E-04	4.00E+02	1.36E+194	1.70E-04	2.79E-03	N/A	8.0E-01
71432	Benzene	0.10	5.22E+00	5.42E-04	4.00E+02	1.40E+157	1.76E-04	1.53E-03	7.8E-06	3.0E-02
67663	Chloroform	0.10	5.22E+00	6.43E-04	4.00E+02	2.93E+132	1.80E-04	N/A	2.3E-05	9.8E-02
156592	cis-1,2-Dichloroethylene	0.10	5.22E+00	4.59E-04	4.00E+02	3.62E+185	1.71E-04	1.20E-01	N/A	2.0E-01
127184	Tetrachloroethylene	0.10	5.22E+00	4.39E-04	4.00E+02	9.93E+193	1.70E-04	2.39E-02	5.9E-06	N/A
79016	Trichloroethylene	0.10	5.22E+00	4.83E-04	4.00E+02	1.52E+176	1.73E-04	7.66E-01	1.1E-04	4.0E-02
75014	Vinyl chloride	0.10	5.22E+00	6.44E-04	4.00E+02	1.44E+132	1.80E-04	2.64E-02	8.8E-06	1.0E-01
91203	Naphthalene	0.10	5.22E+00	4.70E-04	4.00E+02	1.34E+181	1.72E-04	1.53E-03	N/A	3.0E-03
85018	Phenanthrene	0.10	5.22E+00	3.50E-04	4.00E+02	3.05E+243	1.64E-04	1.68E-03	N/A	3.0E-03

Appendix C.4
Johnson & Ettinger Model - Results
Inhalation of Volatiles from Groundwater
Current Adult Residential Scenario - CT
Southwest Prperties, Wells G&H Superfund Site, Operable Unit 2
Aberjona Auto Parts

		RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:					INCREMENTAL RISK CALCULATIONS:	
		Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final Indoor exposure groundwater conc., (µg/L)	Incremental risk from vapor intrusion to Indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
75354	1,1-Dichloroethylene	NA	NA	NA	2.25E+06	NA	NA	4.2E-05
106467	1,4-Dichlorobenzene	NA	NA	NA	7.38E+04	NA	NA	2.2E-06
71432	Benzene	NA	NA	NA	1.75E+06	NA	7.6E-10	3.2E-05
67663	Chloroform	NA	NA	NA	7.92E+06	NA	NA	NA
156592	cis-1,2-Dichloroethylene	NA	NA	NA	3.50E+06	NA	NA	3.8E-04
127184	Tetrachloroethylene	NA	NA	NA	2.00E+05	NA	9.0E-09	NA
79016	Trichloroethylene	NA	NA	NA	1.10E+06	NA	5.4E-06	1.2E-02
75014	Vinyl chloride	NA	NA	NA	2.76E+06	NA	1.5E-08	1.7E-04
91203	Naphthalene	NA	NA	NA	3.10E+04	NA	NA	3.3E-04
85018	Phenanthrene	NA	NA	NA	1.28E+03	NA	NA	3.6E-04

	95% UCL Cancer Risk	95% UCL HI
TOTAL:	5E-06	1E-02

[ ] = Cancer risk > 1E-05 or HQ/HI>1E+00

Appendix C.4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Commercial Scenario - RME
Southwest Properties, Wells G&H Superfund Site, Operable Unit 2
Whitney Barrel

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box) — SL-SCREEN Version 2.3; 03/01

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [X]

ENTER Chemical CAS No. (numbers only, no dashes)	Chemical	Enter initial soil concentration. ENTER Mean soil conc., C_R (µg/kg)	ENTER Depth below grade to bottom of enclosed space floor, L_F (1.5 or 200 cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	Note	ENTER User-defined vadose zone soil vapor permeability, k_v (cm²)	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm³)	ENTER Vadose zone soil total porosity, n^A (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^A (cm³/cm³)	ENTER Vadose zone soil organic carbon fraction, f_oc^A (unitless)	ENTER Averaging time for carcinogens, ATC (yrs)	ENTER Averaging time for noncarcinogens, ATNC (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure time, ET (hrs/day)	ENTER Cancer slope factor, CSF (mg/kg-day)⁻¹	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
95636	Trimethylbenzene, 1,2,4-		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
540590	Dichloroethylene, 1,2- (total)		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
108678	Trimethylbenzene, 1,3,5-		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
104518	n-Butylbenzene		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
91203	Naphthalene	2.74E+03	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
99878	Isopropyltoluene, 4-		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
135988	Butylbenzene, sec-		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
74873	Chloromethane	2.49E+02	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
75014	Vinyl chloride	2.81E+02	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
74839	Bromomethane		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
75003	Ethyl Chloride	8.80E+01	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
75354	1,1-Dichloroethylene	1.20E+02	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
67641	Acetone	3.24E+02	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
75150	Carbon Disulfide		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
79209	Methyl Acetate		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
75092	Methylene chloride	7.27E+02	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
156605	trans-1,2-Dichloroethylene	7.73E+01	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
1634044	Methyl-Tertiary-Butyl Ether	5.75E+01	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
75343	1,1-Dichloroethane	5.56E+02	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
156592	cis-1,2-Dichloroethylene	1.80E+02	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
78933	Butanone, 2- (MEK)		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
71556	1,1,1-Trichloroethane		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
110827	Cyclohexane		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
71432	Benzene	2.10E+02	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
79016	Trichloroethylene	2.91E+02	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
1566672	Methyl cyclohexane	4.45E+02	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
108883	Toluene	5.65E+02	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
127184	Tetrachloroethylene	1.47E+02	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
108907	Chlorobenzene	3.11E+02	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
100414	Ethylbenzene	1.84E+02	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
1330207	Xylenes		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
100425	Styrene		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
98828	Isopropylbenzene		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
79345	1,1,2,2-Tetrachloroethane		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
541731	Dichlorobenzene, 1,3-	1.00E+02	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
106467	1,4-Dichlorobenzene	2.50E+02	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
95501	1,2-Dichlorobenzene	5.10E+01	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
120821	1,2,4-Trichlorobenzene		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
100527	Benzaldehyde		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
91576	Methylnaphthalene, 2-	8.41E+03	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
92524	Biphenyl, 1,1'-		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
208968	Acenaphthylene	4.00E+02	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
83329	Acenaphthene		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
132649	Dibenzofuran	1.79E+03	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
86737	Fluorene		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
85018	Phenanthrene	3.66E+04	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
120127	Anthracene		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
C5-C8	C5-C8 Aliphatics	9.83E+04	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
C9-C12	C9-C12 Aliphatics	8.11E+04	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
C9-C10	C9-C10 Aromatics	4.31E+06	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
C9-C18	C9-C18 Aliphatics	6.04E+06	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1
C11-C22	C11-C22 Aromatics	4.10E+06	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	25	25	250	8	8760	1.0E-06	1

Note:
1) Default soil parameters from table 7 of User's Guide for Evaluating Subsurface Vapor Intrusion into Building (U.S. EPA June 19, 2003) were used for soil water filled porosity (θ_w), soil organic carbon fraction (f_{oc}), soil total porosity (n), and soil dry bulk density (ρ_b).

Appendix C.4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Commercial Scenario - RME
Southwest Prperties, Wells G&H Superfund Site, Operable Unit 2
Whitney Barrel

Chemical CAS No. (numbers only, no dashes)	Chemical	Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)	Physical state at soil temperature, (S,L,G)
95636	Trimethylbenzene, 1,2,4-	7.80E-02	9.03E-06	5.70E-03	25	1.25E+03	442.30	649.11	3.72E+03	5.70E+01	N/A	6.0E-03	L
540590	Dichloroethylene, 1,2- (total)	5.59E-02	6.47E-06	4.30E-04	20	1.32E+03	585.00	877.50	1.28E+02	1.30E+00	#N/A	#N/A	0.0E+00
108678	Trimethylbenzene, 1,3,5-	6.48E-02	7.86E-06	7.81E-03	25	1.25E+03	442.30	649.11	1.67E+03	2.00E+01	N/A	6.0E-03	L
104518	n-Butylbenzene	7.25E-02	8.39E-06	1.25E-02	25	1.23E+03	456.00	684.00	2.51E+03	1.26E+00	#N/A	#N/A	L
91203	Naphthalene	5.90E-02	7.50E-06	4.83E-04	25	1.04E+04	491.14	748.40	2.00E+03	3.10E+01	N/A	3.0E-03	S
99876	Isopropyltoluene, 4-	7.25E-02	8.39E-06	8.60E+00	25	1.24E+03	450.10	652.04	1.58E+03	2.34E+01	N/A	4.0E-01	L
135988	Butylbenzene, sec-	8.00E-02	8.00E-06	1.67E-02	25	1.24E+03	446.65	669.98	3.11E+04	1.76E+01	#N/A	#N/A	0.0E+00
74873	Chloromethane	1.26E-01	6.50E-06	8.67E-03	25	1.35E+03	249.00	373.50	1.43E+01	5.32E+03	N/A	9.0E-02	0.0E+00
75014	Vinyl chloride	1.06E-01	1.23E-05	2.71E-02	25	5.25E+03	259.25	432.00	1.86E+01	2.76E+03	8.8E-06	1.0E-01	L
74839	Bromomethane	7.28E-02	1.21E-05	6.22E-03	25	5.49E+03	276.50	414.75	1.43E+01	1.52E+04	N/A	5.0E-03	0.0E+00
75003	Ethyl Chloride	1.26E-01	6.50E-06	8.67E-03	25	1.36E+03	249.00	373.50	1.43E+01	5.32E+03	N/A	1.0E+01	L
75354	1,1-Dichloroethylene	9.00E-02	1.04E-05	2.61E-02	25	6.25E+03	304.75	576.05	5.69E+01	2.25E+03	N/A	2.0E-01	L
76131	Trichloro-1,2,2-triflouroethane, 1,1,2-	2.88E-02	8.07E-06	5.17E-01	25	1.33E+03	320.70	481.05	2.25E+02	1.70E+02	N/A	3.0E+01	0.0E+00
67641	Acetone	1.24E-01	1.14E-05	3.88E-05	25	6.96E+03	329.20	508.10	5.75E-01	1.00E+06	N/A	N/A	L
75150	Carbon Disulfide	1.04E-01	1.29E-05	1.27E-02	25	6.39E+03	319.00	552.00	5.14E+01	2.67E+03	N/A	7.0E-01	L
79209	Methyl Acetate	1.04E-01	1.00E-05	1.13E-04	25	1.31E+03	365.00	547.50	3.32E+00	2.43E+05	#N/A	#N/A	0.0E+00
75092	Methylene chloride	1.01E-01	1.17E-05	2.19E-03	25	6.71E+03	313.00	510.00	1.17E+01	1.30E+04	4.7E-07	3.0E+00	L
156605	trans-1,2-Dichloroethylene	7.07E-02	1.19E-05	9.39E-03	25	1.33E+03	320.85	516.50	5.25E+01	6.30E+03	N/A	2.0E-01	L
1634044	Methyl-Tertiary-Butyl Ether	1.02E-01	1.05E-05	5.87E-04	25	1.32E+03	328.36	497.11	3.84E+01	5.10E+04	N/A	3.0E+00	L
75343	1,1-Dichloroethane	7.42E-02	1.05E-05	5.61E-03	25	6.90E+03	330.55	523.00	3.16E+01	5.06E+03	N/A	5.0E-01	L
156592	cis-1,2-Dichloroethylene	7.36E-02	1.13E-05	4.07E-03	25	7.19E+03	333.65	544.00	3.55E+01	3.50E+03	N/A	2.0E-01	L
78933	Butanone, 2- (MEK)	8.08E-02	9.80E-06	5.60E-05	25	1.31E+03	352.50	528.75	3.83E+00	2.23E+05	N/A	N/A	0.0E+00
71556	1,1,1-Trichloroethane	7.80E-02	8.80E-06	1.72E-02	25	7.14E+03	347.24	545.00	1.10E+02	1.33E+03	N/A	2.2E+00	L
110827	Cyclohexane	8.00E-02	9.00E-06	2.00E+00	25	1.31E+03	353.85	530.78	1.60E+02	5.50E+01	#N/A	#N/A	0.0E+00
71432	Benzene	8.80E-02	9.80E-06	5.56E-03	25	7.34E+03	353.24	562.16	5.89E+01	1.75E+03	7.8E-06	3.0E-02	L
79016	Trichloroethylene	7.90E-02	9.10E-06	1.03E-02	25	7.51E+03	360.36	544.20	1.66E+02	1.10E+03	1.1E-04	4.0E-02	L
108872	Methyl cyclohexane	9.86E-02	8.52E-06	4.23E-01	25	1.30E+03	373.90	560.85	2.68E+02	1.40E+01	N/A	3.0E+00	L
108883	Toluene	8.70E-02	8.60E-06	6.63E-03	25	7.93E+03	383.78	591.79	1.82E+02	5.26E+02	N/A	4.0E-01	L
127184	Tetrachloroethylene	7.20E-02	8.20E-06	1.84E-02	25	8.29E+03	394.40	620.20	1.55E+02	2.00E+02	5.9E-06	N/A	L
108907	Chlorobenzene	7.30E-02	8.70E-06	3.71E-03	25	8.41E+03	404.87	632.40	2.19E+02	4.72E+02	N/A	6.0E-02	L
100414	Ethylbenzene	7.50E-02	7.80E-06	7.88E-03	25	8.50E+03	409.34	617.20	3.63E+02	1.69E+02	N/A	1.0E+00	L
1330207	Xylenes	7.69E-02	8.44E-06	6.73E-06	25	1.26E+03	417.40	616.21	2.41E+02	2.20E+02	N/A	1.0E-01	L
100425	Styrene	7.10E-02	8.00E-06	2.76E-03	25	8.74E+03	418.31	636.00	7.76E+02	3.10E+02	#N/A	#N/A	L
98828	Isopropylbenzene	6.50E-02	7.83E-06	1.47E-02	25	1.26E+03	425.40	631.01	9.31E+03	5.60E+01	N/A	4.0E-01	L
79345	1,1,2,2-Tetrachloroethane	7.10E-02	7.90E-06	3.44E-04	25	9.00E+03	419.60	661.15	9.33E+01	2.97E+03	#N/A	#N/A	L
541731	Dichlorobenzene, 1,3-	4.14E-02	8.85E-06	4.70E-03	25	1.24E+03	446.00	683.96	1.70E+02	6.88E+01	N/A	N/A	L
106467	1,4-Dichlorobenzene	6.90E-02	7.90E-06	2.43E-03	25	9.27E+03	447.21	684.75	6.17E+02	7.38E+01	N/A	8.0E-01	S
95501	1,2-Dichlorobenzene	6.88E-02	9.41E-06	1.62E-06	25	9.70E+03	465.00	697.50	5.34E+01	2.77E+04	N/A	N/A	S
120821	1,2,4-Trichlorobenzene	3.00E-02	8.23E-06	1.42E-03	25	1.05E+04	486.15	725.00	1.76E+03	3.00E+02	N/A	2.0E-01	L
100527	Benzaldehyde	7.30E-02	9.07E-06	2.62E-05	25	1.24E+03	452.00	678.00	3.27E+01	6.57E+03	#N/A	#N/A	0.0E+00
91576	Methylnaphthalene, 2-	4.84E-02	7.75E-06	1.01E-03	25	1.17E+03	514.05	761.01	8.51E+03	2.46E+01	N/A	3.0E-03	S
92524	Biphenyl, 1,1'-	4.04E-02	8.15E-06	3.03E-04	25	1.15E+03	529.10	793.65	6.25E+03	6.94E+00	N/A	N/A	0.0E+00
208968	Acenaphthylene	4.43E-02	7.44E-06	2.80E-04	25	1.12E+03	553.00	792.01	4.79E+03	3.93E+00	N/A	3.0E-03	S
83329	Acenaphthene	4.21E-02	7.69E-06	1.55E-04	25	1.22E+04	550.54	803.15	7.08E+03	4.24E+00	N/A	3.0E-03	S
132649	Dibenzofuran	2.67E-02	5.93E-06	4.00E-03	25	1.11E+03	559.00	824.01	8.13E+03	1.00E+01	N/A	N/A	S
86737	Fluorene	3.63E-02	7.88E-06	9.41E-08	25	1.27E+04	570.44	870.00	7.71E+03	1.90E+00	N/A	3.0E-03	S
85018	Phenanthrene	3.30E-02	7.47E-06	1.30E-04	25	1.06E+03	613.00	869.01	1.41E+04	1.28E+00	N/A	3.0E-03	S
120127	Anthracene	3.24E-02	7.74E-06	6.51E-05	25	1.31E+04	615.18	873.00	2.95E+04	4.34E-02	N/A	3.0E-03	S
C5-C8	C5-C8 Aliphatics	6.00E-02	1.00E-05	1.30E+00	25	NA	NA	NA	2.27E+03	1.10E+04	N/A	2.0E-01	S
C9-C12	C9-C12 Aliphatics	6.00E-02	1.00E-05	1.56E+00	25	NA	NA	NA	1.50E+05	7.00E+01	N/A	2.0E-01	S
C9-C10	C9-C10 Aromatics	6.00E-02	1.00E-05	7.92E-03	25	NA	NA	NA	1.78E+03	5.10E+04	N/A	5.0E-02	S
C9-C18	C9-C18 Aliphatics	6.00E-02	1.00E-05	1.66E+00	25	NA	NA	NA	6.80E+05	1.00E+01	N/A	2.0E-01	S
C11-C22	C11-C22 Aromatics	6.00E-02	1.00E-05	7.32E-04	25	NA	NA	NA	5.00E+03	5.80E+03	N/A	5.0E-02	S

Appendix C.4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Commercial Scenario - RME
Southwest Properties, Wells G&H Superfund Site, Operable Unit 2
Whitney Barrel

Chemical CAS No. (numbers only, no dashes)	Chemical	Source-building separation, LT (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, Xcrack (cm)	Initial soil concentration used, CR (µg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'TS (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)
95636	Trimethylbenzene, 1,2,4-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	4.36E+05	2.62E+06	9.50E+06	1.30E-04	15	1.55E+03	4.98E-03	2.13E-01	1.75E-04	4.77E-04
540590	Dichloroethylene, 1,2- (total)	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.96E+02	2.62E+06	9.50E+06	1.30E-04	15	1.73E+03	3.87E-04	1.67E-02	1.75E-04	3.77E-04
108678	Trimethylbenzene, 1,3,5-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	7.13E+04	2.62E+06	9.50E+06	1.30E-04	15	1.55E+03	6.60E-03	2.93E-01	1.75E-04	3.96E-04
104518	n-Butylbenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	6.63E+03	2.62E+06	9.50E+06	1.30E-04	15	1.53E+03	1.09E-02	4.69E-01	1.75E-04	4.41E-04
91203	Naphthalene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.74E+03	2.62E+06	9.50E+06	1.30E-04	15	1.29E+04	1.52E-04	6.55E-03	1.75E-04	4.70E-04
99876	Isopropyltoluene, 4-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	7.31E+05	2.62E+06	9.50E+06	1.30E-04	15	1.57E+03	7.48E+00	3.22E+02	1.75E-04	4.39E-04
135988	Butylbenzene, sec-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.10E+06	2.62E+06	9.50E+06	1.30E-04	15	1.53E+03	1.46E-02	6.27E-01	1.75E-04	4.86E-04
74873	Chloromethane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.49E+02	2.62E+06	9.50E+06	1.30E-04	15	1.20E+03	7.79E-03	3.35E-01	1.75E-04	7.66E-04
75014	Vinyl chloride	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.61E+02	2.62E+06	9.50E+06	1.30E-04	15	5.00E+03	1.73E-02	7.46E-01	1.75E-04	6.44E-04
74839	Bromomethane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.69E+06	2.62E+06	9.50E+06	1.30E-04	15	5.39E+03	3.64E-03	1.65E-01	1.75E-04	4.48E-04
75003	Ethyl Chloride	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	8.60E+01	2.62E+06	9.50E+06	1.30E-04	15	1.20E+03	7.78E-03	3.35E-01	1.75E-04	7.66E-04
75354	1,1-Dichloroethylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.20E+02	2.62E+06	9.50E+06	1.30E-04	15	6.39E+03	1.47E-02	6.34E-01	1.75E-04	6.47E-04
76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.99E+05	2.62E+06	9.50E+06	1.30E-04	15	1.44E+03	4.55E-01	1.96E+01	1.75E-04	1.75E-04
67641	Acetone	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.24E+02	2.62E+06	9.50E+06	1.30E-04	15	7.56E+03	1.97E-05	8.50E-04	1.75E-04	2.07E-03
75150	Carbon Disulfide	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	8.78E+05	2.62E+06	9.50E+06	1.30E-04	15	6.68E+03	6.99E-03	3.01E-01	1.75E-04	6.34E-04
79209	Methyl Acetate	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.03E+07	2.62E+06	9.50E+06	1.30E-04	15	1.50E+03	9.86E-05	4.25E-03	1.75E-04	6.61E-04
75092	Methylene chloride	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	7.27E+02	2.62E+06	9.50E+06	1.30E-04	15	7.03E+03	1.17E-03	5.03E-02	1.75E-04	6.35E-04
156605	trans-1,2-Dichloroethylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	7.73E+01	2.62E+06	9.50E+06	1.30E-04	15	1.42E+03	8.27E-03	3.56E-01	1.75E-04	4.32E-04
1634044	Methyl-Tertiary-Butyl Ether	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.75E+01	2.62E+06	9.50E+06	1.30E-04	15	1.45E+03	5.16E-04	2.22E-02	1.75E-04	6.67E-04
75343	1,1-Dichloroethane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.58E+02	2.62E+06	9.50E+06	1.30E-04	15	7.45E+03	2.88E-03	1.24E-01	1.75E-04	4.56E-04
156592	cis-1,2-Dichloroethylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.80E+02	2.62E+06	9.50E+06	1.30E-04	15	7.79E+03	2.04E-03	8.77E-02	1.75E-04	4.59E-04
78933	Butanone, 2- (MEK)	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	4.63E+07	2.62E+06	9.50E+06	1.30E-04	15	1.48E+03	5.49E-05	2.11E-03	1.75E-04	9.45E-04
71556	1,1,1-Trichloroethane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	8.01E+05	2.62E+06	9.50E+06	1.30E-04	15	7.86E+03	8.50E-03	3.66E-01	1.75E-04	4.75E-04
110827	Cyclohexane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.88E+05	2.62E+06	9.50E+06	1.30E-04	15	1.49E+03	1.75E+00	7.54E+01	1.75E-04	4.85E-04
71432	Benzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.10E+02	2.62E+06	9.50E+06	1.30E-04	15	8.12E+03	2.69E-03	1.16E-01	1.75E-04	5.42E-04
79016	Trichloroethylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.91E+02	2.62E+06	9.50E+06	1.30E-04	15	8.58E+03	4.79E-03	2.06E-01	1.75E-04	4.83E-04
108872	Methyl cyclohexane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	4.45E+02	2.62E+06	9.50E+06	1.30E-04	15	1.51E+03	3.70E-01	1.59E+01	1.75E-04	5.98E-04
108883	Toluene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.85E+02	2.62E+06	9.50E+06	1.30E-04	15	9.15E+03	2.92E-03	1.26E-01	1.75E-04	5.34E-04
127184	Tetrachloroethylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.47E+02	2.62E+06	9.50E+06	1.30E-04	15	9.55E+03	7.83E-03	3.37E-01	1.75E-04	4.39E-04
108907	Chlorobenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.11E+02	2.62E+06	9.50E+06	1.30E-04	15	9.80E+03	1.54E-03	6.65E-02	1.75E-04	4.56E-04
100414	Ethylbenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.84E+02	2.62E+06	9.50E+06	1.30E-04	15	1.02E+04	3.16E-03	1.37E-01	1.75E-04	4.60E-04
1330207	Xylenes	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.50E+05	2.62E+06	9.50E+06	1.30E-04	15	1.54E+03	5.86E-06	2.52E-04	1.75E-04	3.75E-03
100425	Styrene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.44E+05	2.62E+06	9.50E+06	1.30E-04	15	1.05E+04	1.06E-03	4.67E-02	1.75E-04	4.47E-04
98828	Isopropylbenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.06E+06	2.62E+06	9.50E+06	1.30E-04	15	1.54E+03	1.28E-02	5.51E-01	1.75E-04	3.95E-04
79345	1,1,2,2-Tetrachloroethane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.16E+06	2.62E+06	9.50E+06	1.30E-04	15	1.05E+04	1.34E-04	5.77E-03	1.75E-04	5.85E-04
541731	Dichlorobenzene, 1,3-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.00E+02	2.62E+06	9.50E+06	1.30E-04	15	1.50E+03	4.11E-03	1.77E-01	1.75E-04	2.56E-04
106467	1,4-Dichlorobenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.50E+02	2.62E+06	9.50E+06	1.30E-04	15	1.12E+04	8.89E-04	3.83E-02	1.75E-04	4.38E-04
95501	1,2-Dichlorobenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.10E+01	2.62E+06	9.50E+06	1.30E-04	15	1.21E+04	6.51E-07	2.37E-05	1.75E-04	3.94E-02
120821	1,2,4-Trichlorobenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.13E+06	2.62E+06	9.50E+06	1.30E-04	15	1.32E+04	4.36E-04	1.87E-02	1.75E-04	2.25E-04
100527	Benzaldehyde	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.74E+06	2.62E+06	9.50E+06	1.30E-04	15	1.53E+03	2.29E-05	9.84E-04	1.75E-04	1.35E-03
91576	Methylnaphthalene, 2-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	6.41E+03	2.62E+06	9.50E+06	1.30E-04	15	1.51E+03	8.86E-04	3.81E-02	1.75E-04	3.13E-04
92524	Biphenyl, 1,1'-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	8.81E+04	2.62E+06	9.50E+06	1.30E-04	15	1.47E+03	2.66E-04	1.14E-02	1.75E-04	3.15E-04
208968	Acenaphthylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	4.00E+02	2.62E+06	9.50E+06	1.30E-04	15	1.51E+03	2.45E-04	1.05E-02	1.75E-04	3.38E-04
83329	Acenaphthene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	6.09E+04	2.62E+06	9.50E+06	1.30E-04	15	1.81E+04	3.67E-05	1.58E-03	1.75E-04	7.33E-04
132649	Dibenzofuran	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.79E+03	2.62E+06	9.50E+06	1.30E-04	15	1.47E+03	3.51E-03	1.51E-01	1.75E-04	1.66E-04
86737	Fluorene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.97E+04	2.62E+06	9.50E+06	1.30E-04	15	1.62E+04	2.20E-06	9.48E-05	1.75E-04	8.16E-01
85018	Phenanthrene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.64E+04	2.62E+06	9.50E+06	1.30E-04	15	1.48E+03	1.14E-04	4.90E-03	1.75E-04	3.50E-04
120127	Anthracene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.57E+03	2.62E+06	9.50E+06	1.30E-04	15	1.84E+04	1.26E-05	5.43E-04	1.75E-04	1.60E-03
C5-C8	C5-C8 Aliphatics	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	9.83E+04	2.62E+06	9.50E+06	1.30E-04	15	NA	6.48E-01	2.79E+01	1.75E-04	3.64E-04
C9-C12	C9-C12 Aliphatics	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	6.11E+04	2.62E+06	9.50E+06	1.30E-04	15	NA	7.80E-01	3.36E+01	1.75E-04	3.64E-04
C9-C10	C9-C10 Aromatics	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	4.31E+05	2.62E+06	9.50E+06	1.30E-04	15	NA	3.96E-03	1.70E-01	1.75E-04	3.69E-04
C9-C18	C9-C18 Aliphatics	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	6.04E+06	2.62E+06	9.50E+06	1.30E-04	15	NA	8.28E-01	3.56E+01	1.75E-04	3.64E-04
C11-C22	C11-C22 Aromatics	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	4.10E+06	2.62E+06	9.50E+06	1.30E-04	15	NA	3.60E-04	1.55E-02	1.75E-04	4.27E-04

Appendix C 4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Commercial Scenario - RME
Southwest Properties, Wells G&H Superfund Site, Operable
Whitney Barrel

Chemical CAS No. (numbers only, no dashes)	Chemical	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Soil-water partition coefficient, K_d (cm^3/g)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pef) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
95636	Trimethylbenzene, 1,2,4-	1	15	7.43E+00	N/A	0.10	2.74E+01	4.77E-04	1.23E+03	2.75E+303	1.08E-05	N/A	N/A	6.0E-03
540590	Dichloroethylene, 1,2- (total)	1	15	2.67E-01	N/A	0.10	2.74E+01	3.77E-04	1.23E+03	#NUM!	1.08E-05	N/A	#N/A	#N/A
108678	Trimethylbenzene, 1,3,5-	1	15	3.34E+00	N/A	0.10	2.74E+01	3.96E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	6.0E-03
104518	n-Butylbenzene	1	15	5.02E+00	N/A	0.10	2.74E+01	4.41E-04	1.23E+03	#NUM!	1.08E-05	N/A	#N/A	#N/A
91203	Naphthalene	1	15	4.00E+00	4.27E+03	0.10	2.74E+01	4.70E-04	1.23E+03	9.67E+307	1.08E-05	4.61E-02	N/A	3.0E-03
99876	Isopropyltoluene, 4-	1	15	3.18E+00	N/A	0.10	2.74E+01	4.39E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	4.0E-01
135988	Butylbenzene, sec-	1	15	6.22E+01	N/A	0.10	2.74E+01	4.86E-04	1.23E+03	5.47E+297	1.08E-05	N/A	#N/A	#N/A
74873	Chloromethane	1	15	2.86E-02	3.24E+06	0.10	2.74E+01	7.86E-04	1.23E+03	1.14E+189	1.08E-05	3.51E+00	N/A	9.0E-02
75014	Vinyl chloride	1	15	3.72E-02	6.48E+06	0.10	2.74E+01	8.44E-04	1.23E+03	5.27E+224	1.08E-05	6.99E+00	8.8E-06	1.0E-01
74839	Bromomethane	1	15	2.86E-02	N/A	0.10	2.74E+01	4.46E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	5.0E-03
75003	Ethyl Chloride	1	15	2.86E-02	1.12E+06	0.10	2.74E+01	7.86E-04	1.23E+03	1.14E+189	1.08E-05	1.21E+00	N/A	1.0E+01
75354	1,1-Dichloroethylene	1	15	1.18E-01	2.04E+05	0.10	2.74E+01	5.47E-04	1.23E+03	3.62E+284	1.08E-05	2.21E+00	N/A	2.0E-01
76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	1	15	4.50E-01	N/A	0.10	2.74E+01	1.75E-04	1.23E+03	#NUM!	1.07E-05	N/A	N/A	3.0E+01
67641	Acetone	1	15	1.15E-03	1.37E+03	0.10	2.74E+01	2.07E-03	1.23E+03	9.18E+69	1.08E-05	1.48E-02	N/A	N/A
75150	Carbon Disulfide	1	15	1.03E-01	N/A	0.10	2.74E+01	6.34E-04	1.23E+03	1.25E+228	1.08E-05	N/A	N/A	7.0E-01
79209	Methyl Acetate	1	15	6.64E-03	N/A	0.10	2.74E+01	6.61E-04	1.23E+03	1.17E+168	1.08E-05	N/A	#N/A	#N/A
75092	Methylene chloride	1	15	2.34E-02	1.60E+05	0.10	2.74E+01	8.35E-04	1.23E+03	8.55E+227	1.08E-05	1.73E+00	4.7E-07	3.0E+00
156605	trans-1,2-Dichloroethylene	1	15	1.05E-01	8.20E+04	0.10	2.74E+01	4.32E-04	1.23E+03	#NUM!	1.08E-05	8.85E-01	N/A	2.0E-01
1634044	Methyl-Tertiary-Butyl Ether	1	15	7.68E-02	4.58E+03	0.10	2.74E+01	6.67E-04	1.23E+03	9.48E+216	1.08E-05	4.96E-02	N/A	3.0E+00
75343	1,1-Dichloroethane	1	15	6.32E-02	1.62E+06	0.10	2.74E+01	4.58E-04	1.23E+03	#NUM!	1.08E-05	1.75E+00	N/A	5.0E-01
156592	cis-1,2-Dichloroethylene	1	15	7.10E-02	5.66E+04	0.10	2.74E+01	4.59E-04	1.23E+03	#NUM!	1.08E-05	6.12E-01	N/A	2.0E-01
78933	Butanone, 2- (MEK)	1	15	7.66E-03	N/A	0.10	2.74E+01	9.45E-04	1.23E+03	1.16E+153	1.08E-05	N/A	N/A	N/A
71556	1,1,1-Trichloroethane	1	15	2.20E-01	N/A	0.10	2.74E+01	4.75E-04	1.23E+03	4.36E+304	1.08E-05	N/A	N/A	2.2E+00
110827	Cyclohexane	1	15	3.20E-01	N/A	0.10	2.74E+01	4.85E-04	1.23E+03	3.16E+298	1.08E-05	N/A	#N/A	#N/A
71432	Benzene	1	15	1.18E-01	7.41E+04	0.10	2.74E+01	5.42E-04	1.23E+03	1.81E+267	1.08E-05	8.02E-01	7.8E-06	3.0E-02
79016	Trichloroethylene	1	15	3.32E-01	1.09E+06	0.10	2.74E+01	4.83E-04	1.23E+03	3.77E+299	1.08E-05	1.18E+00	1.1E-04	4.0E-02
108872	Methyl cyclohexane	1	15	6.30E-01	3.35E+06	0.10	2.74E+01	5.98E-04	1.23E+03	1.50E+242	1.08E-05	3.62E+01	N/A	3.0E+00
108883	Toluene	1	15	3.64E-01	1.28E+06	0.10	2.74E+01	5.34E-04	1.23E+03	1.10E+271	1.08E-05	1.39E+00	N/A	4.0E-01
127184	Tetrachloroethylene	1	15	3.10E-01	9.19E+04	0.10	2.74E+01	4.39E-04	1.23E+03	#NUM!	1.08E-05	9.82E-01	5.9E-06	N/A
108907	Chlorobenzene	1	15	4.38E-01	3.21E+04	0.10	2.74E+01	4.56E-04	1.23E+03	#NUM!	1.08E-05	3.46E-01	N/A	6.0E-02
100414	Ethylbenzene	1	15	7.28E-01	2.68E+04	0.10	2.74E+01	4.60E-04	1.23E+03	#NUM!	1.08E-05	2.90E-01	N/A	1.0E+00
1330207	Xylenes	1	15	4.82E-01	N/A	0.10	2.74E+01	3.76E-03	1.23E+03	4.03E+36	1.09E-05	N/A	N/A	1.0E-01
100425	Styrene	1	15	1.55E+00	N/A	0.10	2.74E+01	4.47E-04	1.23E+03	#NUM!	1.08E-05	N/A	#N/A	#N/A
98828	Isopropylbenzene	1	15	1.86E+01	N/A	0.10	2.74E+01	3.95E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	4.0E-01
79345	1,1,2,2-Tetrachloroethane	1	15	1.87E-01	N/A	0.10	2.74E+01	5.65E-04	1.23E+03	1.98E+256	1.08E-05	N/A	#N/A	#N/A
541731	Dichlorobenzene, 1,3-	1	15	3.40E-01	3.19E+04	0.10	2.74E+01	2.56E-04	1.23E+03	#NUM!	1.07E-05	3.42E-01	N/A	N/A
106467	1,4-Dichlorobenzene	1	15	1.23E+00	6.66E+03	0.10	2.74E+01	4.38E-04	1.23E+03	#NUM!	1.08E-05	7.19E-02	N/A	8.0E-01
95501	1,2-Dichlorobenzene	1	15	1.07E-01	3.84E+00	0.10	2.74E+01	3.84E-02	1.23E+03	4.74E+03	1.09E-05	4.25E-05	N/A	N/A
120821	1,2,4-Trichlorobenzene	1	15	3.56E+00	N/A	0.10	2.74E+01	2.25E-04	1.23E+03	#NUM!	1.07E-05	N/A	N/A	2.0E-01
100527	Benzaldehyde	1	15	6.54E-02	N/A	0.10	2.74E+01	1.35E-03	1.23E+03	2.60E+107	1.08E-05	N/A	#N/A	#N/A
91576	Methylnaphthalene, 2-	1	15	1.70E+01	1.20E+04	0.10	2.74E+01	3.13E-04	1.23E+03	#NUM!	1.08E-05	1.29E-01	N/A	3.0E-03
92524	Biphenyl, 1,1-	1	15	1.25E+01	N/A	0.10	2.74E+01	3.15E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	N/A
208968	Acenaphthylene	1	15	9.57E+00	4.31E+02	0.10	2.74E+01	3.38E-04	1.23E+03	#NUM!	1.08E-05	4.64E-03	N/A	3.0E-03
83329	Acenaphthene	1	15	1.42E+01	N/A	0.10	2.74E+01	7.33E-04	1.23E+03	2.13E+187	1.08E-05	N/A	N/A	3.0E-03
132649	Dibenzofuran	1	15	1.63E+01	1.84E+04	0.10	2.74E+01	1.66E-04	1.23E+03	#NUM!	1.07E-05	1.75E-01	N/A	N/A
86737	Fluorene	1	15	1.54E+01	N/A	0.10	2.74E+01	8.16E-01	1.23E+03	1.50E+00	3.24E-05	N/A	N/A	3.0E-03
85018	Phenanthrene	1	15	2.63E+01	6.27E+03	0.10	2.74E+01	3.50E-04	1.23E+03	#NUM!	1.08E-05	6.76E-02	N/A	3.0E-03
120127	Anthracene	1	15	5.90E+01	N/A	0.10	2.74E+01	1.80E-03	1.23E+03	5.14E+90	1.08E-05	N/A	N/A	3.0E-03
C5-C8	C5-C8 Aliphatics	1	15	4.63E+00	3.84E+06	0.10	2.74E+01	3.84E-04	1.23E+03	#NUM!	1.08E-05	4.14E+03	N/A	2.0E-01
C9-C12	C9-C12 Aliphatics	1	15	3.00E+02	6.76E+06	0.10	2.74E+01	3.84E-04	1.23E+03	#NUM!	1.08E-05	7.29E+01	N/A	2.0E-01
C9-C10	C9-C10 Aromatics	1	15	3.56E+00	1.95E+07	0.10	2.74E+01	3.69E-04	1.23E+03	#NUM!	1.08E-05	2.10E+02	N/A	5.0E-02
C9-C18	C9-C18 Aliphatics	1	15	1.39E+03	1.68E+08	0.10	2.74E+01	3.54E-04	1.23E+03	#NUM!	1.08E-05	1.70E+03	N/A	2.0E-01
C11-C22	C11-C22 Aromatics	1	15	1.00E+01	8.23E+06	0.10	2.74E+01	4.27E-04	1.23E+03	#NUM!	1.08E-05	6.72E+01	N/A	5.0E-02

Appendix C.4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Commercial Scenario - RME
Southwest Properties, Wells G&H Superfund Site, Operable Unit 2
Whitney Barrel

RISK-BASED SOIL CONCENTRATION CALCULATIONS:

INCREMENTAL RISK CALCULATIONS:

Chemical CAS No. (numbers only, no dashes)	Chemical	Indoor exposure soil conc., carcinogen (µg/kg)	Indoor exposure soil conc., noncarcinogen (µg/kg)	Risk-based indoor exposure soil conc., (µg/kg)	Soil saturation conc., C_{sat} (µg/kg)	Final indoor exposure soil conc., (µg/kg)	Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
95636	Trimethylbenzene, 1,2,4-	NA	NA	NA	4.38E+05	NA	NA	NA
540590	Dichloroethylene, 1,2- (total)	NA	NA	NA	5.96E+02	NA	NA	NA
108678	Trimethylbenzene, 1,3,5-	NA	NA	NA	7.13E+04	NA	NA	NA
104518	n-Butylbenzene	NA	NA	NA	6.53E+03	NA	NA	NA
91203	Naphthalene	NA	NA	NA	1.30E+05	NA	NA	3.5E-03
99876	Isopropyltoluene, 4-	NA	NA	NA	7.31E+05	NA	NA	NA
135988	Butylbenzene, sec-	NA	NA	NA	1.10E+06	NA	NA	NA
74873	Chloromethane	NA	NA	NA	1.37E+06	NA	NA	8.9E-03
75014	Vinyl chloride	NA	NA	NA	8.33E+05	NA	5.0E-06	1.6E-02
74839	Bromomethane	NA	NA	NA	3.89E+05	NA	NA	NA
75003	Ethyl Chloride	NA	NA	NA	1.37E+06	NA	NA	2.8E-05
75354	1,1-Dichloroethylene	NA	NA	NA	6.39E+05	NA	NA	2.5E-03
76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	NA	NA	NA	3.99E+05	NA	NA	NA
67641	Acetone	NA	NA	NA	2.01E+06	NA	NA	NA
75150	Carbon Disulfide	NA	NA	NA	6.78E+05	NA	NA	NA
79209	Methyl Acetate	NA	NA	NA	5.03E+07	NA	NA	NA
75092	Methylene chloride	NA	NA	NA	2.96E+06	NA	5.6E-06	1.3E-04
156605	trans-1,2-Dichloroethylene	NA	NA	NA	2.12E+06	NA	NA	1.0E-03
1634044	Methyl-Tertiary-Butyl Ether	NA	NA	NA	1.42E+07	NA	NA	3.8E-06
75343	1,1-Dichloroethane	NA	NA	NA	1.38E+06	NA	NA	8.0E-04
156592	cis-1,2-Dichloroethylene	NA	NA	NA	9.75E+05	NA	NA	7.0E-04
78933	Butanone, 2- (MEK)	NA	NA	NA	4.63E+07	NA	NA	NA
71556	1,1,1-Trichloroethane	NA	NA	NA	6.01E+05	NA	NA	NA
110827	Cyclohexane	NA	NA	NA	3.88E+05	NA	NA	NA
71432	Benzene	NA	NA	NA	5.74E+05	NA	5.1E-07	6.1E-03
79016	Trichloroethylene	NA	NA	NA	6.05E+05	NA	1.1E-05	6.7E-03
108872	Methyl cyclohexane	NA	NA	NA	2.96E+04	NA	NA	2.8E-03
108883	Toluene	NA	NA	NA	3.02E+05	NA	NA	7.9E-04
127184	Tetrachloroethylene	NA	NA	NA	1.08E+05	NA	4.8E-07	NA
108907	Chlorobenzene	NA	NA	NA	3.04E+05	NA	NA	1.3E-03
100414	Ethylbenzene	NA	NA	NA	1.58E+05	NA	NA	9.8E-05
1330207	Xylenes	NA	NA	NA	1.50E+05	NA	NA	NA
100425	Styrene	NA	NA	NA	5.44E+05	NA	NA	NA
98828	Isopropylbenzene	NA	NA	NA	1.06E+06	NA	NA	NA
79345	1,1,2,2-Tetrachloroethane	NA	NA	NA	1.15E+06	NA	NA	NA
541731	Dichlorobenzene, 1,3-	NA	NA	NA	3.62E+04	NA	NA	NA
106467	1,4-Dichlorobenzene	NA	NA	NA	1.06E+05	NA	NA	2.1E-03
95501	1,2-Dichlorobenzene	NA	NA	NA	8.50E+05	NA	NA	NA
120821	1,2,4-Trichlorobenzene	NA	NA	NA	1.13E+06	NA	NA	NA
100527	Benzaldehyde	NA	NA	NA	1.74E+06	NA	NA	NA
91576	Methylnaphthalene, 2-	NA	NA	NA	4.24E+05	NA	NA	9.8E-03
92524	Biphenyl, 1,1'-	NA	NA	NA	8.81E+04	NA	NA	NA
208968	Acenaphthylene	NA	NA	NA	3.84E+04	NA	NA	3.5E-04
83329	Acenaphthene	NA	NA	NA	6.09E+04	NA	NA	NA
132649	Dibenzofuran	NA	NA	NA	1.85E+05	NA	NA	NA
86737	Fluorene	NA	NA	NA	2.97E+04	NA	NA	NA
85018	Phenanthrene	NA	NA	NA	3.84E+04	NA	NA	5.1E-03
120127	Anthracene	NA	NA	NA	2.37E+03	NA	NA	NA
C5-C8	C5-C8 Aliphatics	NA	NA	NA	7.86E+07	NA	NA	4.7E+00
C9-C12	C9-C12 Aliphatics	NA	NA	NA	2.12E+07	NA	NA	8.3E-02
C9-C10	C9-C10 Aromatics	NA	NA	NA	1.92E+06	NA	NA	9.6E-01
C9-C18	C9-C18 Aliphatics	NA	NA	NA	1.35E+07	NA	NA	1.9E+00
C11-C22	C11-C22 Aromatics	NA	NA	NA	6.82E+07	NA	NA	3.1E-01

	95% UCL Cancer Risk	95% UCL HI
TOTAL:	2E-05	8.1E+00

= Cancer risk > 1E-05 or HQ/HI>1E+00

Trimethylbenzene, 1,2,4-	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
Dichloroethylene, 1,2- (total)	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
Trimethylbenzene, 1,3,5-	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
n-Butylbenzene	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
Naphthalene	
Isopropyltoluene, 4-	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
Butylbenzene, sec-	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
Chloromethane	
Vinyl chloride	
Bromomethane	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
Ethyl Chloride	
1,1-Dichloroethylene	
Trichloro-1,2,2-trifluoroethane, 1,1,2-	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
Acetone	
Carbon Disulfide	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
Methyl Acetate	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
Methylene chloride	
trans-1,2-Dichloroethylene	
Methyl-Tertiary-Butyl Ether	
1,1-Dichloroethane	
cis-1,2-Dichloroethylene	
Butanone, 2- (MEK)	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
1,1,1-Trichloroethane	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
Cyclohexane	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
Benzene	
Trichloroethylene	

Appendix C.4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Commercial Scenario - CT
Southwest Properties, Wells G&H Superfund Site, Operable Unit 2
Whitney Barrel

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

SL-SCREEN
Version 2.3; 03/01

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES X

ENTER Chemical CAS No. (numbers only, no dashes)	Chemical	Enter initial soil concentration. ENTER Mean soil conc. C_R (µg/kg)	ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Depth below grade to top of contamination, L_1 (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR Note	ENTER User-defined vadose zone soil vapor permeability, k_v (cm²)	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm³)	ENTER Vadose zone soil total porosity, n^A (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^A (cm³/cm³)	ENTER Vadose zone soil organic carbon fraction, f_oc^A (unitless)	ENTER Averaging time for carcinogens, ATC (yrs)	ENTER Averaging time for noncarcinogens, ATNC (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure time ET (hrs/day)	ENTER Conversion factor CF (l/g-yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
95636	Trimethylbenzene, 1,2,4-		15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
540590	Dichloroethylene, 1,2- (total)		15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
108678	Trimethylbenzene, 1,3,5-		15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
104518	n-Butylbenzene		15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
91203	Naphthalene	2.74E+03	15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
99876	Isopropyltoluene, 4-		15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
135988	Butylbenzene, sec-		15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
74873	Chloromethane	2.49E+02	15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
75014	Vinyl chloride	2.61E+02	15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
74839	Bromomethane		15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
75003	Ethyl Chloride	8.60E+01	15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
75354	1,1-Dichloroethylene	8.34E+01	15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-		15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
67641	Acetone	3.24E+02	15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
75150	Carbon Disulfide		15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
79209	Methyl Acetate		15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
75092	Methylene chloride	7.27E+02	15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
156605	trans-1,2-Dichloroethylene	7.73E+01	15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
1634044	Methyl-Tertiary-Butyl Ether	8.73E+01	15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
75343	1,1-Dichloroethane	3.58E+02	15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
156592	cis-1,2-Dichloroethylene	1.80E+02	15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
78933	Butanone, 2- (MEK)		15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
71556	1,1,1-Trichloroethane		15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
110827	Cyclohexane		15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
71432	Benzene	8.08E+01	15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
79016	Trichloroethylene	2.91E+02	15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
108872	Methyl cyclohexane	4.45E+02	15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
108883	Toluene	3.85E+02	15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
127184	Tetrachloroethylene	1.47E+02	15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
108907	Chlorobenzene	3.11E+02	15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
100414	Ethylbenzene	1.84E+02	15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
1330207	Xylenes		15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
100425	Styrene		15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
98828	Isopropylbenzene		15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
79345	1,1,2,2-Tetrachloroethane		15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
541731	Dichlorobenzene, 1,3-	1.00E+02	15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
106467	1,4-Dichlorobenzene	2.50E+02	15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
95501	1,2-Dichlorobenzene	5.10E+01	15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
120821	1,2,4-Trichlorobenzene		15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
100527	Benzaldehyde		15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
91576	Methylnaphthalene, 2-	5.41E+05	15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
92524	Biphenyl, 1,1'-		15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
208968	Acenaphthylene	4.00E+02	15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
83329	Acenaphthene		15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
132649	Dibenzofuran	1.79E+03	15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
86737	Fluorene		15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
85018	Phenanthrene	3.66E+04	15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
120127	Anthracene		15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
C5-C8	C5-C8 Aliphatics	8.85E+04	15	15	10	LS	1		1.6	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
C9-C12	C9-C12 Aliphatics	6.11E+04	15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
C9-C10	C9-C10 Aromatics	4.31E+05	15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
C9-C18	C9-C18 Aliphatics	9.25E+05	15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1
C11-C22	C11-C22 Aromatics	9.24E+05	15	15	10	LS	1		1.5	0.43	0.3	0.002	70	9	9	219	8	6760	1.0E-06	1

Note:
1) Default soil parameters from table 7 of User's Guide for Evaluating Subsurface Vapor Intrusion into Building (U.S. EPA June 19, 2003) were used for soil water filled porosity (θ_w), soil organic carbon fraction (f_{oc}), soil total porosity (n), and soil dry bulk density (ρ_b).

Appendix C.4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Commercial Scenario - CT
Southwest Prperties, Wells G&H Superfund Site, Operable Unit 2
Whitney Barrel

Chemical CAS No. (numbers only, no dashes)	Chemical	Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)	Physical state at soil temperature, (S,L,G)
95636	Trimethylbenzene, 1,2,4-	7.80E-02	9.03E-06	5.70E-03	25	1.25E+03	442.30	649.11	3.72E+03	5.70E+01	N/A	6.0E-03	L
540590	Dichloroethylene, 1,2- (total)	5.59E-02	6.47E-06	4.30E-04	20	1.32E+03	585.00	877.50	1.28E+02	1.30E+00	#N/A	#N/A	0.0E+00
108678	Trimethylbenzene, 1,3,5-	6.48E-02	7.86E-06	7.81E-03	25	1.25E+03	442.30	649.11	1.67E+03	2.00E+01	N/A	6.0E-03	L
104518	n-Butylbenzene	7.25E-02	8.39E-06	1.25E-02	25	1.23E+03	456.00	684.00	2.51E+03	1.26E+00	#N/A	#N/A	L
91203	Naphthalene	5.90E-02	7.50E-06	4.83E-04	25	1.04E+04	491.14	748.40	2.00E+03	3.10E+01	N/A	3.0E-03	S
99876	Isopropyltoluene, 4-	7.25E-02	8.39E-06	6.60E+00	25	1.24E+03	450.10	652.04	1.58E+03	2.34E+01	N/A	4.0E-01	L
135988	Butylbenzene, sec-	6.00E-02	6.00E-06	1.87E-02	25	1.24E+03	446.65	669.98	3.11E+04	1.76E+01	#N/A	#N/A	0.0E+00
74873	Chloromethane	1.26E-01	6.50E-06	8.67E-03	25	1.35E+03	249.00	373.50	1.43E+01	5.32E+03	N/A	9.0E-02	0.0E+00
75014	Vinyl chloride	1.06E-01	1.23E-05	2.71E-02	25	5.25E+03	259.25	432.00	1.86E+01	2.76E+03	8.8E-06	1.0E-01	L
74839	Bromomethane	7.28E-02	1.21E-05	6.22E-03	25	5.49E+03	276.50	414.75	1.43E+01	1.52E+04	N/A	5.0E-03	0.0E+00
75003	Ethyl Chloride	1.26E-01	6.50E-06	8.67E-03	25	1.36E+03	249.00	373.50	1.43E+01	5.32E+03	N/A	1.0E+01	L
75354	1,1-Dichloroethylene	9.00E-02	1.04E-05	2.61E-02	25	6.25E+03	304.75	576.05	5.89E+01	2.25E+03	N/A	2.0E-01	L
76131	Trichloro-1,2,2-trifluouroethane, 1,1,2-	2.68E-02	8.07E-06	5.17E-01	25	1.33E+03	320.70	481.05	2.25E+02	1.70E+02	N/A	3.0E+01	0.0E+00
67641	Acetone	1.24E-01	1.14E-05	3.88E-05	25	6.96E+03	329.20	508.10	5.75E-01	1.00E+06	N/A	N/A	L
75150	Carbon Disulfide	1.04E-01	1.29E-05	1.27E-02	25	6.39E+03	319.00	552.00	5.14E+01	2.67E+03	N/A	7.0E-01	L
79209	Methyl Acetate	1.04E-01	1.00E-05	1.13E-04	25	1.31E+03	365.00	547.50	3.32E+00	2.43E+05	#N/A	#N/A	0.0E+00
75092	Methylene chloride	1.01E-01	1.17E-05	2.19E-03	25	6.71E+03	313.00	510.00	1.17E+01	1.30E+04	4.7E-07	3.0E+00	L
156605	trans-1,2-Dichloroethylene	7.07E-02	1.19E-05	9.39E-03	25	1.33E+03	320.65	516.50	5.25E+01	6.30E+03	N/A	2.0E-01	L
1634044	Methyl-Tertiary-Butyl Ether	1.02E-01	1.05E-05	5.87E-04	25	1.32E+03	328.36	497.11	1.84E+01	5.10E+04	N/A	3.0E+00	L
75343	1,1-Dichloroethane	7.42E-02	1.05E-05	5.61E-03	25	6.90E+03	330.55	523.00	3.16E+01	5.06E+03	N/A	5.0E-01	L
156592	cis-1,2-Dichloroethylene	7.36E-02	1.13E-05	4.07E-03	25	7.19E+03	333.65	544.00	3.55E+01	3.50E+03	N/A	2.0E-01	L
78933	Butanone, 2- (MEK)	8.08E-02	9.80E-06	5.60E-05	25	1.31E+03	352.50	528.75	3.83E+00	2.23E+05	N/A	N/A	0.0E+00
71556	1,1,1-Trichloroethane	7.80E-02	8.80E-06	1.72E-02	25	7.14E+03	347.24	545.00	1.10E+02	1.33E+03	N/A	2.2E+00	L
110827	Cyclohexane	8.00E-02	9.00E-06	2.00E+00	25	1.31E+03	353.85	530.78	1.60E+02	5.50E+01	#N/A	#N/A	0.0E+00
71432	Benzene	8.80E-02	9.80E-06	5.56E-03	25	7.34E+03	353.24	562.16	5.89E+01	1.75E+03	7.8E-06	3.0E-02	L
79016	Trichloroethylene	7.90E-02	9.10E-06	1.03E-02	25	7.51E+03	360.36	544.20	1.66E+02	1.10E+03	1.1E-04	4.0E-02	L
108872	Methyl cyclohexane	9.86E-02	8.52E-06	4.23E-01	25	1.30E+03	373.90	560.85	2.68E+02	1.40E+01	N/A	3.0E+00	L
108883	Toluene	8.70E-02	8.60E-06	6.63E-03	25	7.93E+03	383.78	591.79	1.82E+02	5.26E+02	N/A	4.0E-01	L
127184	Tetrachloroethylene	7.20E-02	8.20E-06	1.84E-02	25	8.29E+03	394.40	620.20	1.55E+02	2.00E+02	5.9E-06	N/A	L
108907	Chlorobenzene	7.30E-02	8.70E-06	3.71E-03	25	8.41E+03	404.87	632.40	2.19E+02	4.72E+02	N/A	6.0E-02	L
100414	Ethylbenzene	7.50E-02	7.80E-06	7.88E-03	25	8.50E+03	409.34	617.20	3.63E+02	1.69E+02	N/A	1.0E+00	L
1330207	Xylenes	7.69E-02	8.44E-06	6.73E-06	25	1.26E+03	417.40	616.21	2.41E+02	2.20E+02	N/A	1.0E-01	L
100425	Styrene	7.10E-02	8.00E-06	2.76E-03	25	8.74E+03	418.31	636.00	7.76E+02	3.10E+02	#N/A	#N/A	L
98828	Isopropylbenzene	6.50E-02	7.83E-06	1.47E-02	25	1.26E+03	425.40	631.01	9.31E+03	5.60E+01	N/A	4.0E-01	L
79345	1,1,2,2-Tetrachloroethane	7.10E-02	7.90E-06	3.44E-04	25	9.00E+03	419.60	661.15	9.33E+01	2.97E+03	#N/A	#N/A	L
541731	Dichlorobenzene, 1,3-	4.14E-02	8.85E-06	4.70E-03	25	1.24E+03	446.00	683.96	1.70E+02	6.88E+01	N/A	N/A	L
106467	1,4-Dichlorobenzene	6.90E-02	7.90E-06	2.43E-03	25	9.27E+03	447.21	684.75	6.17E+02	7.38E+01	N/A	8.0E-01	S
95501	1,2-Dichlorobenzene	6.86E-02	9.41E-06	1.62E-06	25	9.70E+03	465.00	697.50	5.34E+01	2.77E+04	N/A	N/A	S
120821	1,2,4-Trichlorobenzene	3.00E-02	8.23E-06	1.42E-03	25	1.05E+04	486.15	725.00	1.78E+03	3.00E+02	N/A	2.0E-01	L
100527	Benzaldehyde	7.30E-02	9.07E-06	2.62E-05	25	1.24E+03	452.00	678.00	3.27E+01	6.57E+03	#N/A	#N/A	0.0E+00
91576	Methylnaphthalene, 2-	4.84E-02	7.75E-06	1.01E-03	25	1.17E+03	514.05	761.01	8.51E+03	2.46E+01	N/A	3.0E-03	S
92524	Biphenyl, 1,1'-	4.04E-02	8.15E-06	3.03E-04	25	1.15E+03	529.10	793.65	6.25E+03	6.94E+00	N/A	N/A	0.0E+00
208968	Acenaphthylene	4.43E-02	7.44E-06	2.80E-04	25	1.12E+03	553.00	792.01	4.79E+03	3.93E+00	N/A	3.0E-03	S
83329	Acenaphthene	4.21E-02	7.69E-06	1.55E-04	25	1.22E+04	550.54	803.15	7.08E+03	4.24E+00	N/A	3.0E-03	S
132649	Dibenzofuran	2.67E-02	5.93E-06	4.00E-03	25	1.11E+03	559.00	824.01	8.13E+03	1.00E+01	N/A	N/A	S
86737	Fluorene	3.63E-02	7.88E-06	9.41E-08	25	1.27E+04	570.44	870.00	7.71E+03	1.90E+00	N/A	3.0E-03	S
85018	Phenanthrene	3.30E-02	7.47E-06	1.30E-04	25	1.06E+03	613.00	869.01	1.41E+04	1.28E+00	N/A	3.0E-03	S
120127	Anthracene	3.24E-02	7.74E-06	6.51E-05	25	1.31E+04	615.18	873.00	2.95E+04	4.34E-02	N/A	3.0E-03	S
C5-C8	C5-C8 Aliphatics	6.00E-02	1.00E-05	1.30E+00	25	NA	NA	NA	2.27E+03	1.10E+04	N/A	2.0E-01	S
C9-C12	C9-C12 Aliphatics	6.00E-02	1.00E-05	1.56E+00	25	NA	NA	NA	1.50E+05	7.00E+01	N/A	2.0E-01	S
C9-C10	C9-C10 Aromatics	6.00E-02	1.00E-05	7.92E-03	25	NA	NA	NA	1.78E+03	5.10E+04	N/A	5.0E-02	S
C9-C18	C9-C18 Aliphatics	6.00E-02	1.00E-05	1.66E+00	25	NA	NA	NA	6.60E+05	1.00E+01	N/A	2.0E-01	S
C11-C22	C11-C22 Aromatics	6.00E-02	1.00E-05	7.32E-04	25	NA	NA	NA	5.00E+03	5.80E+03	N/A	5.0E-02	S

Appendix C.4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Commercial Scenario - CT
Southwest Properties, Wells G&H Superfund Site, Operable Unit 2
Whitney Barrel

Chemical CAS No. (numbers only, no dashes)	Chemical	Source-building separation, LT (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, Xcrack (cm)	Initial soil concentration used, GR (µg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,Ts}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, HTS (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)
95636	Trimethylbenzene, 1,2,4-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	4.36E+05	2.52E+06	9.50E+06	1.30E-04	15	1.55E+03	4.96E-03	2.13E-01	1.75E-04	4.77E-04
540590	Dichloroethylene, 1,2- (total)	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.96E+02	2.52E+06	9.50E+06	1.30E-04	15	1.73E+03	3.87E-04	1.67E-02	1.75E-04	3.77E-04
108678	Trimethylbenzene, 1,3,5-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	7.13E+04	2.52E+06	9.50E+06	1.30E-04	15	1.55E+03	6.80E-03	2.93E-01	1.75E-04	3.95E-04
104518	n-Butylbenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	8.63E+03	2.52E+06	9.50E+06	1.30E-04	15	1.53E+03	1.09E-02	4.69E-01	1.75E-04	4.41E-04
91203	Naphthalene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.74E+03	2.52E+06	9.50E+06	1.30E-04	15	1.29E+04	1.52E-04	6.55E-03	1.75E-04	4.70E-04
99876	Isopropyltoluene, 4-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	7.31E+05	2.52E+06	9.50E+06	1.30E-04	15	1.57E+03	7.48E+00	3.22E+02	1.75E-04	4.39E-04
135988	Butylbenzene, sec-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.10E+06	2.52E+06	9.50E+06	1.30E-04	15	1.53E+03	1.46E-02	6.27E-01	1.75E-04	4.86E-04
74873	Chloromethane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.49E+02	2.52E+06	9.50E+06	1.30E-04	15	1.20E+03	7.79E-03	3.35E-01	1.75E-04	7.66E-04
75014	Vinyl chloride	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.61E+02	2.52E+06	9.50E+06	1.30E-04	15	5.00E+03	1.73E-02	7.46E-01	1.75E-04	6.44E-04
74839	Bromomethane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.89E+06	2.52E+06	9.50E+06	1.30E-04	15	5.39E+03	3.84E-03	1.65E-01	1.75E-04	4.48E-04
75003	Ethyl Chloride	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	8.80E+01	2.52E+06	9.50E+06	1.30E-04	15	1.20E+03	7.78E-03	3.35E-01	1.75E-04	7.66E-04
75354	1,1-Dichloroethylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	6.34E+01	2.52E+06	9.50E+06	1.30E-04	15	6.39E+03	1.47E-02	6.34E-01	1.75E-04	5.47E-04
76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.99E+05	2.52E+06	9.50E+06	1.30E-04	15	1.44E+03	4.55E-01	1.96E+01	1.75E-04	1.75E-04
67641	Acetone	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.24E+02	2.52E+06	9.50E+06	1.30E-04	15	7.56E+03	1.97E-05	8.50E-04	1.75E-04	2.07E-03
75150	Carbon Disulfide	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	6.78E+05	2.52E+06	9.50E+06	1.30E-04	15	6.65E+03	6.99E-03	3.01E-01	1.75E-04	6.34E-04
79209	Methyl Acetate	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.03E+07	2.52E+06	9.50E+06	1.30E-04	15	1.50E+03	9.88E-05	4.25E-03	1.75E-04	8.61E-04
75092	Methylene chloride	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	7.27E+02	2.52E+06	9.50E+06	1.30E-04	15	7.03E+03	1.17E-03	5.03E-02	1.75E-04	8.35E-04
156605	trans-1,2-Dichloroethylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	7.73E+01	2.52E+06	9.50E+06	1.30E-04	15	1.42E+03	8.27E-03	3.56E-01	1.75E-04	4.32E-04
1634044	Methyl-Tertiary-Butyl Ether	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.75E+01	2.52E+06	9.50E+06	1.30E-04	15	1.45E+03	5.16E-04	2.22E-02	1.75E-04	8.67E-04
75343	1,1-Dichloroethane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.58E+02	2.52E+06	9.50E+06	1.30E-04	15	7.45E+03	2.88E-03	1.24E-01	1.75E-04	4.58E-04
156592	cis-1,2-Dichloroethylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.80E+02	2.52E+06	9.50E+06	1.30E-04	15	7.73E+03	2.04E-03	8.77E-02	1.75E-04	4.59E-04
78933	Butanone, 2- (MEK)	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	4.83E+07	2.52E+06	9.50E+06	1.30E-04	15	1.49E+03	4.90E-05	2.11E-03	1.75E-04	9.45E-04
71556	1,1,1-Trichloroethane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	6.01E+05	2.52E+06	9.50E+06	1.30E-04	15	7.88E+03	8.50E-03	3.66E-01	1.75E-04	4.75E-04
110827	Cyclohexane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.88E+05	2.52E+06	9.50E+06	1.30E-04	15	1.49E+03	1.75E+00	7.54E+01	1.75E-04	4.85E-04
71432	Benzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	6.08E+01	2.52E+06	9.50E+06	1.30E-04	15	8.12E+03	2.68E-03	1.16E-01	1.75E-04	5.42E-04
79016	Trichloroethylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.91E+02	2.52E+06	9.50E+06	1.30E-04	15	8.66E+03	4.79E-03	2.06E-01	1.75E-04	4.83E-04
108872	Methyl cyclohexane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	4.45E+02	2.52E+06	9.50E+06	1.30E-04	15	1.51E+03	3.70E-01	1.59E+01	1.75E-04	5.98E-04
108883	Toluene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.85E+02	2.52E+06	9.50E+06	1.30E-04	15	9.15E+03	2.92E-03	1.26E-01	1.75E-04	5.34E-04
127184	Tetrachloroethylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.47E+02	2.52E+06	9.50E+06	1.30E-04	15	9.55E+03	7.83E-03	3.37E-01	1.75E-04	4.39E-04
108907	Chlorobenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.11E+02	2.52E+06	9.50E+06	1.30E-04	15	8.80E+03	1.54E-03	6.65E-02	1.75E-04	4.56E-04
100414	Ethylbenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.84E+02	2.52E+06	9.50E+06	1.30E-04	15	1.02E+04	3.15E-03	1.37E-01	1.75E-04	4.60E-04
1330207	Xylenes	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.50E+05	2.52E+06	9.50E+06	1.30E-04	15	1.54E+03	5.86E-06	2.52E-04	1.75E-04	3.75E-03
100425	Styrene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.44E+05	2.52E+06	9.50E+06	1.30E-04	15	1.05E+04	1.08E-03	4.67E-02	1.75E-04	4.47E-04
98828	Isopropylbenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.06E+06	2.52E+06	9.50E+06	1.30E-04	15	1.64E+03	1.28E-02	5.51E-01	1.75E-04	3.96E-04
79345	1,1,2,2-Tetrachloroethane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.18E+06	2.52E+06	9.50E+06	1.30E-04	15	1.05E+04	1.34E-04	5.77E-03	1.75E-04	5.65E-04
541731	Dichlorobenzene, 1,3-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.00E+02	2.52E+06	9.50E+06	1.30E-04	15	1.50E+03	4.11E-03	1.77E-01	1.75E-04	2.58E-04
106467	1,4-Dichlorobenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.60E+02	2.52E+06	9.50E+06	1.30E-04	15	1.12E+04	8.89E-04	3.83E-02	1.75E-04	4.36E-04
95501	1,2-Dichlorobenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.10E+01	2.52E+06	9.50E+06	1.30E-04	15	1.21E+04	6.51E-07	2.37E-05	1.75E-04	3.84E-02
120821	1,2,4-Trichlorobenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.13E+06	2.52E+06	9.50E+06	1.30E-04	15	1.32E+04	4.35E-04	1.87E-02	1.75E-04	2.26E-04
100527	Benzaldehyde	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.74E+06	2.52E+06	9.50E+06	1.30E-04	15	1.63E+03	2.29E-05	9.84E-04	1.75E-04	1.35E-03
91576	Methylnaphthalene, 2-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.41E+03	2.52E+06	9.50E+06	1.30E-04	15	1.61E+03	8.85E-04	3.81E-02	1.75E-04	3.13E-04
92524	Biphenyl, 1,1'-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	8.81E+04	2.52E+06	9.50E+06	1.30E-04	15	1.47E+03	2.65E-04	1.14E-02	1.75E-04	3.15E-04
208968	Acenaphthylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	4.00E+02	2.52E+06	9.50E+06	1.30E-04	15	1.61E+03	2.45E-04	1.05E-02	1.75E-04	3.38E-04
83329	Acenaphthene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	6.09E+04	2.52E+06	9.50E+06	1.30E-04	15	1.61E+04	3.67E-05	1.58E-03	1.75E-04	7.33E-04
132649	Dibenzofuran	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.79E+03	2.52E+06	9.50E+06	1.30E-04	15	1.47E+03	3.51E-03	1.51E-01	1.75E-04	1.66E-04
86737	Fluorene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.97E+04	2.52E+06	9.50E+06	1.30E-04	15	1.52E+04	2.20E-06	9.46E-05	1.75E-04	8.16E-01
85018	Phenanthrene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.64E+04	2.52E+06	9.50E+06	1.30E-04	15	1.48E+03	1.14E-04	4.90E-03	1.75E-04	3.50E-04
120127	Anthracene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.57E+03	2.52E+06	9.50E+06	1.30E-04	15	1.84E+04	1.28E-05	5.43E-04	1.75E-04	1.80E-03
C5-C8	C5-C8 Aliphatics	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	9.83E+04	2.52E+06	9.50E+06	1.30E-04	15	NA	6.48E-01	2.79E+01	1.75E-04	3.84E-04
C9-C12	C9-C12 Aliphatics	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	6.11E+04	2.52E+06	9.50E+06	1.30E-04	15	NA	7.80E-01	3.36E+01	1.75E-04	3.84E-04
C9-C10	C9-C10 Aromatics	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	4.31E+05	2.52E+06	9.50E+06	1.30E-04	15	NA	3.95E-03	1.70E-01	1.75E-04	3.69E-04
C9-C18	C9-C18 Aliphatics	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	8.25E+05	2.52E+06	9.50E+06	1.30E-04	15	NA	8.25E-01	3.55E+01	1.75E-04	3.84E-04
C11-C22	C11-C22 Aromatics	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	9.24E+05	2.52E+06	9.50E+06	1.30E-04	15	NA	3.80E-04	1.65E-02	1.75E-04	4.27E-04

Appendix C.4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Commercial Scenario - CT
Southwest Prperties, Wells G&H Superfund Site, Operable
Whitney Barrel

Chemical CAS No. (numbers only, no dashes)	Chemical	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Soil-water partition coefficient, K_d (cm^3/g)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pef) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
95636	Trimethylbenzene, 1,2,4-	1	15	7.43E+00	N/A	0.10	2.74E+01	4.77E-04	1.23E+03	2.75E+309	1.08E-05	N/A	N/A	6.0E-03
540590	Dichloroethylene, 1,2- (total)	1	15	2.57E-01	N/A	0.10	2.74E+01	3.77E-04	1.23E+03	#NUM!	1.08E-05	N/A	#N/A	#N/A
108678	Trimethylbenzene, 1,3,5-	1	15	3.34E+00	N/A	0.10	2.74E+01	3.95E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	6.0E-03
104518	n-Butylbenzene	1	15	5.02E+00	N/A	0.10	2.74E+01	4.41E-04	1.23E+03	#NUM!	1.08E-05	N/A	#N/A	#N/A
91203	Naphthalene	1	15	4.00E+00	4.27E+03	0.10	2.74E+01	4.70E-04	1.23E+03	9.67E+307	1.08E-05	4.61E-02	N/A	3.0E-03
99876	Isopropyltoluene, 4-	1	15	3.16E+00	N/A	0.10	2.74E+01	4.39E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	4.0E-01
135988	Butylbenzene, sec-	1	15	6.22E+01	N/A	0.10	2.74E+01	4.86E-04	1.23E+03	5.47E+297	1.08E-05	N/A	#N/A	#N/A
74873	Chloromethane	1	15	2.88E-02	3.24E+06	0.10	2.74E+01	7.86E-04	1.23E+03	1.14E+189	1.08E-05	3.51E+00	N/A	9.0E-02
75014	Vinyl chloride	1	15	3.72E-02	6.46E+06	0.10	2.74E+01	6.44E-04	1.23E+03	5.27E+224	1.08E-05	8.99E+00	8.8E-06	1.0E-01
74839	Bromomethane	1	15	2.88E-02	N/A	0.10	2.74E+01	4.48E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	5.0E-03
75003	Ethyl Chloride	1	15	2.88E-02	1.12E+05	0.10	2.74E+01	7.86E-04	1.23E+03	1.14E+189	1.08E-05	1.21E+00	N/A	1.0E+01
75354	1,1-Dichloroethylene	1	15	1.18E-01	1.08E+05	0.10	2.74E+01	5.47E-04	1.23E+03	3.62E+264	1.08E-05	1.17E+00	N/A	2.0E-01
76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	1	15	4.50E-01	N/A	0.10	2.74E+01	1.75E-04	1.23E+03	#NUM!	1.07E-05	N/A	N/A	3.0E+01
67641	Acetone	1	15	1.15E-03	1.37E+03	0.10	2.74E+01	2.07E-03	1.23E+03	9.18E+69	1.09E-05	1.48E-02	N/A	N/A
75150	Carbon Disulfide	1	15	1.03E-01	N/A	0.10	2.74E+01	6.34E-04	1.23E+03	1.25E+228	1.08E-05	N/A	N/A	7.0E-01
79209	Methyl Acetate	1	15	6.64E-03	N/A	0.10	2.74E+01	8.51E-04	1.23E+03	1.17E+168	1.08E-05	N/A	#N/A	#N/A
75092	Methylene chloride	1	15	2.34E-02	1.60E+05	0.10	2.74E+01	6.35E-04	1.23E+03	8.55E+227	1.08E-05	1.73E+00	4.7E-07	3.0E+00
156605	trans-1,2-Dichloroethylene	1	15	1.05E-01	8.20E+04	0.10	2.74E+01	4.32E-04	1.23E+03	#NUM!	1.08E-05	8.85E-01	N/A	2.0E-01
1634044	Methyl-Tertiary-Butyl Ether	1	15	7.68E-02	4.58E+03	0.10	2.74E+01	6.67E-04	1.23E+03	9.48E+216	1.08E-05	4.98E-02	N/A	3.0E+00
75343	1,1-Dichloroethane	1	15	6.32E-02	1.62E+05	0.10	2.74E+01	4.58E-04	1.23E+03	#NUM!	1.08E-05	1.75E+00	N/A	5.0E-01
156592	cis-1,2-Dichloroethylene	1	15	7.10E-02	5.68E+04	0.10	2.74E+01	4.59E-04	1.23E+03	#NUM!	1.08E-05	6.12E-01	N/A	2.0E-01
78933	Butanone, 2- (MEK)	1	15	7.68E-03	N/A	0.10	2.74E+01	9.45E-04	1.23E+03	1.18E+153	1.08E-05	N/A	N/A	N/A
71556	1,1,1-Trichloroethane	1	15	2.20E-01	N/A	0.10	2.74E+01	4.75E-04	1.23E+03	4.36E+304	1.08E-05	N/A	N/A	2.2E+00
110827	Cyclohexane	1	15	3.20E-01	N/A	0.10	2.74E+01	4.85E-04	1.23E+03	3.16E+298	1.08E-05	N/A	#N/A	#N/A
71432	Benzene	1	15	1.18E-01	2.55E+04	0.10	2.74E+01	5.42E-04	1.23E+03	1.61E+267	1.08E-05	3.08E-01	7.8E-06	3.0E-02
79016	Trichloroethylene	1	15	3.32E-01	1.09E+05	0.10	2.74E+01	4.93E-04	1.23E+03	3.77E+299	1.08E-05	1.18E+00	1.1E-04	4.0E-02
108872	Methyl cyclohexane	1	15	5.36E-01	3.35E+06	0.10	2.74E+01	5.95E-04	1.23E+03	1.60E+242	1.08E-05	3.62E+01	N/A	3.0E+00
108883	Toluene	1	15	3.64E-01	1.28E+05	0.10	2.74E+01	5.34E-04	1.23E+03	1.10E+271	1.08E-05	1.39E+00	N/A	4.0E-01
127184	Tetrachloroethylene	1	15	3.10E-01	9.19E+04	0.10	2.74E+01	4.39E-04	1.23E+03	#NUM!	1.08E-05	9.92E-01	5.8E-06	N/A
108907	Chlorobenzene	1	15	4.38E-01	3.21E+04	0.10	2.74E+01	4.55E-04	1.23E+03	#NUM!	1.08E-05	3.46E-01	N/A	6.0E-02
100414	Ethylbenzene	1	15	7.26E-01	2.68E+04	0.10	2.74E+01	4.60E-04	1.23E+03	#NUM!	1.08E-05	2.90E-01	N/A	1.0E+00
1330207	Xylenes	1	15	4.82E-01	N/A	0.10	2.74E+01	3.75E-03	1.23E+03	4.03E+38	1.09E-05	N/A	N/A	1.0E-01
100425	Styrene	1	15	1.55E+00	N/A	0.10	2.74E+01	4.47E-04	1.23E+03	#NUM!	1.08E-05	N/A	#N/A	#N/A
98828	Isopropylbenzene	1	15	1.86E+01	N/A	0.10	2.74E+01	3.86E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	4.0E-01
79345	1,1,2,2-Tetrachloroethane	1	15	1.87E-01	N/A	0.10	2.74E+01	5.65E-04	1.23E+03	1.98E+255	1.08E-05	N/A	#N/A	#N/A
541731	Dichlorobenzene, 1,3-	1	15	3.40E-01	3.19E+04	0.10	2.74E+01	2.56E-04	1.23E+03	#NUM!	1.07E-05	3.42E-01	N/A	N/A
106467	1,4-Dichlorobenzene	1	15	1.23E+00	6.56E+03	0.10	2.74E+01	4.38E-04	1.23E+03	#NUM!	1.08E-05	7.19E-02	N/A	8.0E-01
95501	1,2-Dichlorobenzene	1	15	1.07E-01	3.94E+00	0.10	2.74E+01	3.94E-02	1.23E+09	4.74E+09	1.09E-05	4.28E-05	N/A	N/A
120821	1,2,4-Trichlorobenzene	1	15	3.59E+00	N/A	0.10	2.74E+01	2.26E-04	1.23E+09	#NUM!	1.07E-05	N/A	N/A	2.0E-01
100527	Benzaldehyde	1	15	8.64E-02	N/A	0.10	2.74E+01	1.35E-03	1.23E+09	2.60E+107	1.08E-05	N/A	#N/A	#N/A
91576	Methylnaphthalene, 2-	1	15	1.70E+01	1.20E+04	0.10	2.74E+01	3.13E-04	1.23E+03	#NUM!	1.08E-05	1.29E-01	N/A	3.0E-03
92524	Biphenyl, 1,1'-	1	15	1.25E+01	N/A	0.10	2.74E+01	3.15E-04	1.23E+09	#NUM!	1.08E-05	N/A	N/A	N/A
208968	Acenaphthylene	1	15	9.57E+00	4.31E+02	0.10	2.74E+01	3.38E-04	1.23E+03	#NUM!	1.08E-05	4.84E-03	N/A	3.0E-03
83329	Acenaphthene	1	15	1.42E+01	N/A	0.10	2.74E+01	7.33E-04	1.23E+03	2.13E+197	1.08E-05	N/A	N/A	3.0E-03
132649	Dibenzofuran	1	15	1.63E+01	1.64E+04	0.10	2.74E+01	1.66E-04	1.23E+03	#NUM!	1.07E-05	1.75E-01	N/A	N/A
86737	Fluorene	1	15	1.54E+01	N/A	0.10	2.74E+01	8.16E-01	1.23E+09	1.50E+00	3.24E-05	N/A	N/A	3.0E-03
85018	Phenanthrene	1	15	2.69E+01	6.27E+03	0.10	2.74E+01	3.50E-04	1.23E+03	#NUM!	1.08E-05	6.76E-02	N/A	3.0E-03
120127	Anthracene	1	15	5.90E+01	N/A	0.10	2.74E+01	1.60E-03	1.23E+09	5.16E+90	1.08E-05	N/A	N/A	3.0E-03
C5-C8	C5-C8 Aliphatics	1	15	4.53E+00	3.84E+06	0.10	2.74E+01	3.64E-04	1.23E+03	#NUM!	1.08E-05	4.14E+03	N/A	2.0E-01
C9-C12	C9-C12 Aliphatics	1	15	3.00E+02	6.78E+06	0.10	2.74E+01	3.64E-04	1.23E+03	#NUM!	1.08E-05	7.29E+01	N/A	2.0E-01
C9-C10	C9-C10 Aromatics	1	15	3.55E+00	1.95E+07	0.10	2.74E+01	3.69E-04	1.23E+03	#NUM!	1.08E-05	2.10E+02	N/A	5.0E-02
C9-C18	C9-C18 Aliphatics	1	15	1.38E+03	2.42E+07	0.10	2.74E+01	3.64E-04	1.23E+09	#NUM!	1.08E-05	2.61E+02	N/A	2.0E-01
C11-C22	C11-C22 Aromatics	1	15	1.00E+01	1.40E+06	0.10	2.74E+01	4.27E-04	1.23E+09	#NUM!	1.08E-05	1.51E+01	N/A	5.0E-02

Appendix C.4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Commercial Scenario - CT
Southwest Properties, Wells G&H Superfund Site, Operable Unit 2
Whitney Barrel

RISK-BASED SOIL CONCENTRATION CALCULATIONS:

INCREMENTAL RISK CALCULATIONS:

Chemical CAS No. (numbers only, no dashes)	Chemical	Indoor exposure soil conc., carcinogen (µg/kg)	Indoor exposure soil conc., noncarcinogen (µg/kg)	Risk-based indoor exposure soil conc., (µg/kg)	Soil saturation conc., C_{sat} (µg/kg)	Final indoor exposure soil conc., (µg/kg)	Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
95636	Trimethylbenzene, 1,2,4-	NA	NA	NA	4.26E+05	NA	NA	NA
540590	Dichloroethylene, 1,2- (total)	NA	NA	NA	5.98E+02	NA	NA	NA
108678	Trimethylbenzene, 1,3,5-	NA	NA	NA	7.13E+04	NA	NA	NA
104518	n-Butylbenzene	NA	NA	NA	6.63E+03	NA	NA	NA
91203	Naphthalene	NA	NA	NA	1.30E+05	NA	NA	3.1E-03
99876	Isopropyltoluene, 4-	NA	NA	NA	7.31E+05	NA	NA	NA
135988	Butylbenzene, sec-	NA	NA	NA	1.10E+06	NA	NA	NA
74873	Chloromethane	NA	NA	NA	1.37E+06	NA	NA	7.8E-03
75014	Vinyl chloride	NA	NA	NA	8.23E+05	NA	1.6E-06	1.4E-02
74839	Bromomethane	NA	NA	NA	3.69E+06	NA	NA	NA
75003	Ethyl Chloride	NA	NA	NA	1.37E+06	NA	NA	2.4E-05
75354	1,1-Dichloroethylene	NA	NA	NA	5.39E+05	NA	NA	1.2E-03
76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	NA	NA	NA	3.99E+05	NA	NA	NA
67641	Acetone	NA	NA	NA	2.51E+08	NA	NA	NA
75150	Carbon Disulfide	NA	NA	NA	8.78E+05	NA	NA	NA
79209	Methyl Acetate	NA	NA	NA	5.03E+07	NA	NA	NA
75092	Methylene chloride	NA	NA	NA	2.98E+06	NA	2.1E-06	1.2E-04
156605	trans-1,2-Dichloroethylene	NA	NA	NA	2.12E+06	NA	NA	6.8E-04
1634044	Methyl-Tertiary-Butyl Ether	NA	NA	NA	1.42E+07	NA	NA	3.3E-06
75343	1,1-Dichloroethane	NA	NA	NA	1.39E+06	NA	NA	7.0E-04
156592	cis-1,2-Dichloroethylene	NA	NA	NA	9.75E+05	NA	NA	6.1E-04
78933	Butanone, 2- (MEK)	NA	NA	NA	4.63E+07	NA	NA	NA
71556	1,1,1-Trichloroethane	NA	NA	NA	8.01E+05	NA	NA	NA
110827	Cyclohexane	NA	NA	NA	3.88E+05	NA	NA	NA
71432	Benzene	NA	NA	NA	5.74E+05	NA	6.2E-06	2.1E-03
79016	Trichloroethylene	NA	NA	NA	6.05E+05	NA	3.3E-06	5.9E-03
108872	Methyl cyclohexane	NA	NA	NA	3.86E+04	NA	NA	2.4E-03
108883	Toluene	NA	NA	NA	3.02E+05	NA	NA	6.9E-04
127184	Tetrachloroethylene	NA	NA	NA	1.06E+05	NA	1.5E-07	NA
108907	Chlorobenzene	NA	NA	NA	3.04E+05	NA	NA	1.2E-03
100414	Ethylbenzene	NA	NA	NA	1.56E+05	NA	NA	5.8E-05
1330207	Xylenes	NA	NA	NA	1.50E+05	NA	NA	NA
100425	Styrene	NA	NA	NA	5.44E+05	NA	NA	NA
98828	Isopropylbenzene	NA	NA	NA	1.06E+06	NA	NA	NA
79345	1,1,2,2-Tetrachloroethane	NA	NA	NA	1.15E+06	NA	NA	NA
541731	Dichlorobenzene, 1,3-	NA	NA	NA	3.82E+04	NA	NA	NA
106467	1,4-Dichlorobenzene	NA	NA	NA	1.06E+05	NA	NA	1.6E-05
95501	1,2-Dichlorobenzene	NA	NA	NA	5.50E+05	NA	NA	NA
120821	1,2,4-Trichlorobenzene	NA	NA	NA	1.13E+06	NA	NA	NA
100527	Benzaldehyde	NA	NA	NA	1.74E+06	NA	NA	NA
91576	Methylnaphthalene, 2-	NA	NA	NA	4.24E+05	NA	NA	8.6E-03
92524	Biphenyl, 1,1'-	NA	NA	NA	8.81E+04	NA	NA	NA
208968	Acenaphthylene	NA	NA	NA	3.94E+04	NA	NA	3.1E-04
83329	Acenaphthene	NA	NA	NA	6.09E+04	NA	NA	NA
132649	Dibenzofuran	NA	NA	NA	1.63E+05	NA	NA	NA
86737	Fluorene	NA	NA	NA	3.97E+04	NA	NA	NA
85018	Phenanthrene	NA	NA	NA	3.64E+04	NA	NA	4.5E-03
120127	Anthracene	NA	NA	NA	2.57E+03	NA	NA	NA
C5-C8	C5-C8 Aliphatics	NA	NA	NA	7.06E+07	NA	NA	4.1E+00
C9-C12	C9-C12 Aliphatics	NA	NA	NA	2.12E+07	NA	NA	7.3E-02
C9-C10	C9-C10 Aromatics	NA	NA	NA	1.92E+06	NA	NA	6.4E-01
C9-C18	C9-C18 Aliphatics	NA	NA	NA	1.36E+07	NA	NA	2.6E-01
C11-C22	C11-C22 Aromatics	NA	NA	NA	3.92E+07	NA	NA	6.1E-02

	95% UCL Cancer Risk	95% UCL HI
TOTAL:	5E-06	5.4E+00

= Cancer risk > 1E-05 or HQ/HI>1E+00

Trimethylbenzene, 1,2,4-	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
Dichloroethylene, 1,2- (total)	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
Trimethylbenzene, 1,3,5-	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
n-Butylbenzene	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
Naphthalene	
Isopropyltoluene, 4-	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
Butylbenzene, sec-	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
Chloromethane	
Vinyl chloride	
Bromomethane	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
Ethyl Chloride	
1,1-Dichloroethylene	
Trichloro-1,2,2-trifluoroethane, 1,1,2-	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
Acetone	
Carbon Disulfide	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
Methyl Acetate	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
Methylene chloride	
trans-1,2-Dichloroethylene	
Methyl-Tertiary-Butyl Ether	
1,1-Dichloroethane	
cis-1,2-Dichloroethylene	
Butanone, 2- (MEK)	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
1,1,1-Trichloroethane	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
Cyclohexane	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
Benzene	
Trichloroethylene	

Jan98XCS.4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Child Recreational Scenario - RME
Southwest Properties, Wells G&H Superfund Site, Operable Unit 2
Whitney Barrel

CALCULATE Risk-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

SL-SCREEN
Version 2.3; 03/01

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [X]

Enter initial soil concentration

ENTER Chemical CAS No. (numbers only, no dashes)	Chemical	ENTER Mean soil conc., C_R (ug/kg)	ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	Note	OR ENTER User-defined vadose zone soil vapor permeability, k_v (cm²)	ENTER Vadose zone soil dry bulk density, ρ_b (g/cm³)	ENTER Vadose zone soil total porosity, n (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w (cm³/cm³)	ENTER Vadose zone soil organic carbon fraction, f_oc (unitless)	ENTER Averaging time for carcinogens, ATC (yrs)	ENTER Averaging time for noncarcinogens, ATNC (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure time ET (hrs/day)	ENTER Conversion factor CF (hrs/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
95636	Trimethylbenzene, 1,2,4-		15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
540590	Dichloroethylene, 1,2- (total)		15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
108678	Trimethylbenzene, 1,3,5-		15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
104518	n-Butylbenzene		15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
91203	Naphthalene	2.74E+03	15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
99876	Isopropyltoluene, 4-		15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
135988	Butylbenzene, sec-		15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
74873	Chloromethane	2.49E+02	15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
75014	Vinyl chloride	2.61E+02	15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
74839	Bromomethane		15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
75003	Ethyl Chloride	6.80E+01	15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
75354	1,1-Dichloroethylene	1.20E+02	15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-		15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
67641	Acetone	3.24E+02	15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
75150	Carbon Disulfide		15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
79209	Methyl Acetate		15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
75092	Methylene chloride	7.27E+02	15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
156605	trans-1,2-Dichloroethylene	7.73E+01	15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
1634044	Methyl-Tertiary-Butyl Ether	5.75E+01	15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
75343	1,1-Dichloroethane	3.56E+02	15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
156592	cis-1,2-Dichloroethylene	1.80E+02	15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
78933	Butanone, 2- (MEK)		15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
71556	1,1,1-Trichloroethane		15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
110827	Cyclohexane		15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
71432	Benzene	2.10E+02	15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
79016	Trichloroethylene	2.81E+02	15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
108872	Methyl cyclohexane	4.49E+02	15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
108883	Toluene	8.85E+02	15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
127184	Tetrachloroethylene	1.47E+02	15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
108907	Chlorobenzene	3.11E+02	15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
100414	Ethylbenzene	1.84E+02	15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
1330207	Xylenes		15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
100425	Styrene		15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
98828	Isopropylbenzene		15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
79345	1,1,2,2-Tetrachloroethane		15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
541731	Dichlorobenzene, 1,3-	1.00E+02	15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
106467	1,4-Dichlorobenzene	2.50E+02	15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
95501	1,2-Dichlorobenzene	5.10E+01	15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
120821	1,2,4-Trichlorobenzene		15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
100527	Benzaldehyde		15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
91576	Methylnaphthalene, 2-	5.41E+03	15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
92524	Biphenyl, 1,1'-		15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
208968	Acenaphthylene	4.00E+02	15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
83329	Acenaphthene		15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
132649	Dibenzofuran	1.79E+03	15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
86737	Fluorene		15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
85018	Phenanthrene	3.86E+04	15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
120127	Anthracene		15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
C5-C8	C5-C8 Aliphatics	9.83E+04	15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
C9-C12	C9-C12 Aliphatics	6.11E+04	15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
C9-C10	C9-C10 Aromatics	4.31E+04	15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
C9-C18	C9-C18 Aliphatics	8.04E+04	15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1
C11-C22	C11-C22 Aromatics	4.10E+04	15	15	10	L6	1		1.5	0.43	0.3	0.002	70	6	6	25	24	8760	1.0E-06	1

Note:
1) Default soil parameters from table 7 of User's Guide for Evaluating Subsurface Vapor Intrusion into Building (U.S. EPA June 19, 2003) were used for soil water filled porosity (θ_w), soil organic carbon fraction f_{oc}, soil total porosity (n), and soil dry bulk density (ρ_b).

Appendix C.4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Child Recreational Scenario - RME
Southwest Prperties, Wells G&H Superfund Site, Operable Unit 2
Whitney Barrel

Chemical CAS No. (numbers only, no dashes)	Chemical	Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)	Physical state at soil temperature, (S,L,G)
95636	Trimethylbenzene, 1,2,4-	7.80E-02	9.03E-06	5.70E-03	25	1.25E+03	442.30	649.11	3.72E+03	5.70E+01	N/A	6.0E-03	L
540590	Dichloroethylene, 1,2- (total)	5.59E-02	6.47E-06	4.30E-04	20	1.32E+03	585.00	877.50	1.28E+02	1.30E+00	#N/A	#N/A	0.0E+00
108678	Trimethylbenzene, 1,3,5-	6.48E-02	7.86E-06	7.81E-03	25	1.25E+03	442.30	649.11	1.67E+03	2.00E+01	N/A	6.0E-03	L
104518	n-Butylbenzene	7.25E-02	8.39E-06	1.25E-02	25	1.23E+03	456.00	684.00	2.51E+03	1.26E+00	#N/A	#N/A	L
91203	Naphthalene	5.90E-02	7.50E-06	4.83E-04	25	1.04E+04	491.14	748.40	2.00E+03	3.10E+01	N/A	3.0E-03	S
99876	Isopropyltoluene, 4-	7.25E-02	8.39E-06	8.60E+00	25	1.24E+03	450.10	652.04	1.58E+03	2.34E+01	N/A	4.0E-01	L
135988	Butylbenzene, sec-	8.00E-02	8.00E-06	1.67E-02	25	1.24E+03	446.65	669.98	3.11E+04	1.76E+01	#N/A	#N/A	0.0E+00
74873	Chloromethane	1.26E-01	6.50E-06	8.67E-03	25	1.35E+03	249.00	373.50	1.43E+01	5.32E+03	N/A	9.0E-02	0.0E+00
75014	Vinyl chloride	1.06E-01	1.23E-05	2.71E-02	25	5.25E+03	259.25	432.00	1.86E+01	2.76E+03	8.8E-06	1.0E-01	L
74839	Bromomethane	7.28E-02	1.21E-05	6.22E-03	25	5.49E+03	276.50	414.75	1.43E+01	1.52E+04	N/A	5.0E-03	0.0E+00
75003	Ethyl Chloride	1.26E-01	6.50E-06	8.67E-03	25	1.36E+03	249.00	373.50	1.43E+01	5.32E+03	N/A	1.0E+01	L
75354	1,1-Dichloroethylene	9.00E-02	1.04E-05	2.61E-02	25	6.25E+03	304.75	576.05	5.89E+01	2.25E+03	N/A	2.0E-01	L
76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	2.88E-02	8.07E-06	5.17E-01	25	1.33E+03	320.70	481.05	2.25E+02	1.70E+02	N/A	3.0E+01	0.0E+00
67641	Acetone	1.24E-01	1.14E-05	3.68E-05	25	6.96E+03	329.20	508.10	5.75E-01	1.00E+06	N/A	N/A	L
75150	Carbon Disulfide	1.04E-01	1.29E-05	1.27E-02	25	6.39E+03	319.00	552.00	5.14E+01	2.67E+03	N/A	7.0E-01	L
79209	Methyl Acetate	1.04E-01	1.00E-05	1.13E-04	25	1.31E+03	365.00	547.50	3.32E+00	2.43E+05	#N/A	#N/A	0.0E+00
75092	Methylene chloride	1.01E-01	1.17E-05	2.19E-03	25	6.71E+03	313.00	510.00	1.17E+01	1.30E+04	4.7E-07	3.0E+00	L
156605	trans-1,2-Dichloroethylene	7.07E-02	1.19E-05	9.39E-03	25	1.33E+03	320.85	516.50	5.25E+01	6.30E+03	N/A	2.0E-01	L
1634044	Methyl-Tertiary-Butyl Ether	1.02E-01	1.05E-05	5.87E-04	25	1.32E+03	328.36	497.11	3.84E+01	5.10E+04	N/A	3.0E+00	L
75343	1,1-Dichloroethane	7.42E-02	1.05E-05	5.61E-03	25	6.90E+03	330.55	523.00	3.16E+01	5.06E+03	N/A	5.0E-01	L
156592	cis-1,2-Dichloroethylene	7.36E-02	1.13E-05	4.07E-03	25	7.19E+03	333.65	544.00	3.55E+01	3.50E+03	N/A	2.0E-01	L
78933	Butanone, 2- (MEK)	8.08E-02	9.80E-06	5.60E-05	25	1.31E+03	352.50	528.75	3.83E+00	2.23E+05	N/A	N/A	0.0E+00
71556	1,1,1-Trichloroethane	7.80E-02	8.80E-06	1.72E-02	25	7.14E+03	347.24	545.00	1.10E+02	1.33E+03	N/A	2.2E+00	L
110827	Cyclohexane	8.00E-02	9.00E-06	2.00E+00	25	1.31E+03	353.85	530.78	1.60E+02	5.50E+01	#N/A	#N/A	0.0E+00
71432	Benzene	8.80E-02	9.80E-06	5.56E-03	25	7.34E+03	353.24	562.16	5.89E+01	1.75E+03	7.8E-06	3.0E-02	L
79016	Trichloroethylene	7.90E-02	9.10E-06	1.03E-02	25	7.51E+03	360.36	544.20	1.66E+02	1.10E+03	1.1E-04	4.0E-02	L
108872	Methyl cyclohexane	9.86E-02	8.52E-06	4.23E-01	25	1.30E+03	373.90	560.85	2.68E+02	1.40E+01	N/A	3.0E+00	L
108883	Toluene	8.70E-02	8.60E-06	6.63E-03	25	7.93E+03	383.78	591.79	1.82E+02	5.26E+02	N/A	4.0E-01	L
127184	Tetrachloroethylene	7.20E-02	8.20E-06	1.84E-02	25	8.29E+03	394.40	620.20	1.55E+02	2.00E+02	5.9E-06	N/A	L
108907	Chlorobenzene	7.30E-02	8.70E-06	3.71E-03	25	8.41E+03	404.87	632.40	2.19E+02	4.72E+02	N/A	6.0E-02	L
100414	Ethylbenzene	7.50E-02	7.80E-06	7.88E-03	25	8.50E+03	409.34	617.20	3.63E+02	1.69E+02	N/A	1.0E+00	L
1330207	Xylenes	7.69E-02	8.44E-06	6.73E-06	25	1.26E+03	417.40	616.21	2.41E+02	2.20E+02	N/A	1.0E-01	L
100425	Styrene	7.10E-02	8.00E-06	2.76E-03	25	8.74E+03	418.31	636.00	7.76E+02	3.10E+02	#N/A	#N/A	L
98828	Isopropylbenzene	6.50E-02	7.83E-06	1.47E-02	25	1.26E+03	425.40	631.01	9.31E+03	5.60E+01	N/A	4.0E-01	L
79345	1,1,2,2-Tetrachloroethane	7.10E-02	7.90E-06	3.44E-04	25	9.00E+03	419.60	661.15	9.33E+01	2.97E+03	#N/A	#N/A	L
541731	Dichlorobenzene, 1,3-	4.14E-02	8.85E-06	4.70E-03	25	1.24E+03	446.00	683.96	1.70E+02	6.88E+01	N/A	N/A	L
106467	1,4-Dichlorobenzene	6.90E-02	7.90E-06	2.43E-03	25	9.27E+03	447.21	684.75	6.17E+02	7.38E+01	N/A	8.0E-01	S
95501	1,2-Dichlorobenzene	6.88E-02	9.41E-06	1.62E-06	25	9.70E+03	465.00	697.50	5.34E+01	2.77E+04	N/A	N/A	S
120821	1,2,4-Trichlorobenzene	3.00E-02	8.23E-06	1.42E-03	25	1.05E+04	486.15	725.00	1.78E+03	3.00E+02	N/A	2.0E-01	L
100527	Benzaldehyde	7.30E-02	9.07E-06	2.62E-05	25	1.24E+03	452.00	678.00	3.27E+01	6.57E+03	#N/A	#N/A	0.0E+00
91576	Methylnaphthalene, 2-	4.84E-02	7.75E-06	1.01E-03	25	1.17E+03	514.05	761.01	8.51E+03	2.46E+01	N/A	3.0E-03	S
92524	Biphenyl, 1,1'-	4.04E-02	8.15E-06	3.03E-04	25	1.15E+03	529.10	793.65	6.25E+03	6.94E+00	N/A	N/A	0.0E+00
208968	Acenaphthylene	4.43E-02	7.44E-06	2.80E-04	25	1.12E+03	553.00	792.01	4.79E+03	3.93E+00	N/A	3.0E-03	S
83329	Acenaphthene	4.21E-02	7.69E-06	1.55E-04	25	1.22E+04	550.54	803.15	7.08E+03	4.24E+00	N/A	3.0E-03	S
132649	Dibenzofuran	2.67E-02	5.93E-06	4.00E-03	25	1.11E+03	559.00	824.01	8.13E+03	1.00E+01	N/A	N/A	S
86737	Fluorene	3.63E-02	7.88E-06	9.41E-06	25	1.27E+04	570.44	870.00	7.71E+03	1.90E+00	N/A	3.0E-03	S
85018	Phenanthrene	3.30E-02	7.47E-06	1.30E-04	25	1.06E+03	613.00	869.01	1.41E+04	1.28E+00	N/A	3.0E-03	S
120127	Anthracene	3.24E-02	7.74E-06	6.51E-05	25	1.31E+04	615.18	873.00	2.95E+04	4.34E-02	N/A	3.0E-03	S
C5-C8	C5-C8 Aliphatics	6.00E-02	1.00E-05	1.30E+00	25	NA	NA	NA	2.27E+03	1.10E+04	N/A	2.0E-01	S
C9-C12	C9-C12 Aliphatics	6.00E-02	1.00E-05	1.56E+00	25	NA	NA	NA	1.50E+05	7.00E+01	N/A	2.0E-01	S
C9-C10	C9-C10 Aromatics	6.00E-02	1.00E-05	7.92E-03	25	NA	NA	NA	1.78E+03	5.10E+04	N/A	5.0E-02	S
C9-C18	C9-C18 Aliphatics	6.00E-02	1.00E-05	1.66E+00	25	NA	NA	NA	6.80E+05	1.00E+01	N/A	2.0E-01	S
C11-C22	C11-C22 Aromatics	6.00E-02	1.00E-05	7.32E-04	25	NA	NA	NA	5.00E+03	5.80E+03	N/A	5.0E-02	S

Appendix C.4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Child Recreational Scenario - RME
Southwest Properties, Wells G&H Superfund Site, Operable Unit 2
Whitney Barrel

Chemical CAS No. (numbers only, no dashes)	Chemical	Source-building separation, LT (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, Xcrack (cm)	Initial soil concentration used, CR (µg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, HTS (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)
95636	Trimethylbenzene, 1,2,4-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	4.36E+05	2.52E+06	9.50E+06	1.30E-04	15	1.55E+03	4.96E-03	2.13E-01	1.75E-04	4.77E-04
540590	Dichloroethylene, 1,2- (total)	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.96E+02	2.52E+06	9.50E+06	1.30E-04	15	1.73E+03	3.87E-04	1.67E-02	1.75E-04	3.77E-04
108678	Trimethylbenzene, 1,3,5-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	7.13E+04	2.52E+06	9.50E+06	1.30E-04	15	1.55E+03	6.80E-03	2.93E-01	1.75E-04	3.95E-04
104518	n-Butylbenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	6.83E+03	2.52E+06	9.50E+06	1.30E-04	15	1.53E+03	1.09E-02	4.69E-01	1.75E-04	4.41E-04
91203	Naphthalene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.74E+03	2.52E+06	9.50E+06	1.30E-04	15	1.29E+04	1.52E-04	6.55E-03	1.75E-04	4.70E-04
99876	Isopropyltoluene, 4-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	7.31E+05	2.52E+06	9.50E+06	1.30E-04	15	1.57E+03	7.48E+00	3.22E+02	1.75E-04	4.39E-04
135988	Butylbenzene, sec-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.10E+06	2.52E+06	9.50E+06	1.30E-04	15	1.53E+03	1.48E-02	6.27E-01	1.76E-04	4.86E-04
74873	Chloromethane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.49E+02	2.52E+06	9.50E+06	1.30E-04	15	1.20E+03	7.79E-03	3.35E-01	1.75E-04	7.86E-04
75014	Vinyl chloride	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.61E+02	2.52E+06	9.50E+06	1.30E-04	15	5.00E+03	1.73E-02	7.46E-01	1.75E-04	6.44E-04
74839	Bromomethane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.69E+06	2.52E+06	9.50E+06	1.30E-04	15	5.39E+03	3.94E-03	1.65E-01	1.75E-04	4.48E-04
75003	Ethyl Chloride	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	6.60E+01	2.52E+06	9.50E+06	1.30E-04	15	1.20E+03	7.78E-03	3.35E-01	1.75E-04	7.86E-04
75354	1,1-Dichloroethylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.20E+02	2.52E+06	9.50E+06	1.30E-04	15	6.39E+03	1.47E-02	6.34E-01	1.75E-04	5.47E-04
76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.99E+05	2.52E+06	9.50E+06	1.30E-04	15	1.44E+03	4.55E-01	1.96E+01	1.75E-04	1.75E-04
67641	Acetone	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.24E+02	2.52E+06	9.50E+06	1.30E-04	15	7.56E+03	1.97E-05	8.50E-04	1.75E-04	2.07E-03
75150	Carbon Disulfide	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	8.78E+05	2.52E+06	9.50E+06	1.30E-04	15	6.86E+03	6.99E-03	3.01E-01	1.75E-04	6.34E-04
79209	Methyl Acetate	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.03E+07	2.52E+06	9.50E+06	1.30E-04	15	1.50E+03	9.88E-05	4.25E-03	1.75E-04	8.81E-04
75092	Methylene chloride	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	7.27E+02	2.52E+06	9.50E+06	1.30E-04	15	7.03E+03	1.17E-03	5.03E-02	1.75E-04	8.35E-04
156605	trans-1,2-Dichloroethylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	7.73E+01	2.52E+06	9.50E+06	1.30E-04	15	1.42E+03	8.27E-03	3.56E-01	1.75E-04	4.32E-04
1634044	Methyl-Tertiary-Butyl Ether	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.75E+01	2.52E+06	9.50E+06	1.30E-04	15	1.45E+03	5.16E-04	2.22E-02	1.75E-04	8.67E-04
75343	1,1-Dichloroethane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.58E+02	2.52E+06	9.50E+06	1.30E-04	15	7.45E+03	2.88E-03	1.24E-01	1.75E-04	4.58E-04
156592	cis-1,2-Dichloroethylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.80E+02	2.52E+06	9.50E+06	1.30E-04	15	7.73E+03	2.04E-03	8.77E-02	1.75E-04	4.59E-04
78933	Butanone, 2- (MEK)	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	4.83E+07	2.52E+06	9.50E+06	1.30E-04	15	1.49E+03	4.80E-05	2.11E-03	1.75E-04	9.45E-04
71556	1,1,1-Trichloroethane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	6.01E+05	2.52E+06	9.50E+06	1.30E-04	15	7.88E+03	8.50E-03	3.66E-01	1.75E-04	4.75E-04
110827	Cyclohexane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.88E+05	2.52E+06	9.50E+06	1.30E-04	15	1.48E+03	1.75E+00	7.54E+01	1.75E-04	4.85E-04
71432	Benzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.10E+02	2.52E+06	9.50E+06	1.30E-04	15	8.12E+03	2.69E-03	1.16E-01	1.75E-04	5.42E-04
79016	Trichloroethylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.81E+02	2.52E+06	9.50E+06	1.30E-04	15	8.56E+03	4.79E-03	2.06E-01	1.75E-04	4.83E-04
108872	Methyl cyclohexane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	4.45E+02	2.52E+06	9.50E+06	1.30E-04	15	1.51E+03	3.70E-01	1.59E+01	1.75E-04	5.98E-04
108883	Toluene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.85E+02	2.52E+06	9.50E+06	1.30E-04	15	9.15E+03	2.92E-03	1.26E-01	1.75E-04	5.34E-04
127184	Tetrachloroethylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.47E+02	2.52E+06	9.50E+06	1.30E-04	15	9.56E+03	7.83E-03	3.37E-01	1.75E-04	4.39E-04
108907	Chlorobenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.11E+02	2.52E+06	9.50E+06	1.30E-04	15	9.80E+03	1.54E-03	9.65E-02	1.76E-04	4.55E-04
100414	Ethylbenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.84E+02	2.52E+06	9.50E+06	1.30E-04	15	1.02E+04	3.16E-03	1.37E-01	1.75E-04	4.60E-04
1330207	Xylenes	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.50E+05	2.52E+06	9.50E+06	1.30E-04	15	1.54E+03	5.86E-08	2.52E-04	1.76E-04	3.75E-03
100425	Styrene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.44E+05	2.52E+06	9.50E+06	1.30E-04	15	1.06E+04	1.08E-03	4.67E-02	1.75E-04	4.47E-04
98828	Isopropylbenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.08E+06	2.52E+06	9.50E+06	1.30E-04	15	1.54E+03	1.28E-02	5.51E-01	1.75E-04	3.95E-04
79345	1,1,2,2-Tetrachloroethane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.15E+06	2.52E+06	9.50E+06	1.30E-04	15	1.05E+04	1.34E-04	5.77E-03	1.75E-04	5.65E-04
541731	Dichlorobenzene, 1,3-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.00E+02	2.52E+06	9.50E+06	1.30E-04	15	1.50E+03	4.11E-03	1.77E-01	1.75E-04	2.56E-04
106467	1,4-Dichlorobenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.50E+02	2.52E+06	9.50E+06	1.30E-04	15	1.12E+04	8.89E-04	3.83E-02	1.75E-04	4.36E-04
95501	1,2-Dichlorobenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.10E+01	2.52E+06	9.50E+06	1.30E-04	15	1.21E+04	5.51E-07	2.37E-05	1.76E-04	3.94E-02
120821	1,2,4-Trichlorobenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.13E+06	2.52E+06	9.50E+06	1.30E-04	15	1.32E+04	4.35E-04	1.87E-02	1.75E-04	2.25E-04
100527	Benzaldehyde	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.74E+06	2.52E+06	9.50E+06	1.30E-04	15	1.53E+03	2.29E-05	9.84E-04	1.75E-04	1.35E-03
91576	Methylnaphthalene, 2-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.41E+03	2.52E+06	9.50E+06	1.30E-04	15	1.51E+03	6.86E-04	3.81E-02	1.75E-04	3.13E-04
92524	Biphenyl, 1,1'-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	6.61E+04	2.52E+06	9.50E+06	1.30E-04	15	1.47E+03	2.66E-04	1.14E-02	1.75E-04	3.16E-04
208968	Acenaphthylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	4.00E+02	2.52E+06	9.50E+06	1.30E-04	15	1.51E+03	2.45E-04	1.05E-02	1.75E-04	3.38E-04
83329	Acenaphthene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	6.09E+04	2.52E+06	9.50E+06	1.30E-04	15	1.61E+04	3.67E-05	1.58E-03	1.75E-04	7.33E-04
132649	Dibenzofuran	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.79E+03	2.52E+06	9.50E+06	1.30E-04	15	1.47E+03	3.51E-03	1.51E-01	1.75E-04	1.88E-04
86737	Fluorene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.97E+04	2.52E+06	9.50E+06	1.30E-04	15	1.62E+04	2.20E-06	9.48E-07	1.75E-04	8.16E-01
85018	Phenanthrene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.64E+04	2.52E+06	9.50E+06	1.30E-04	15	1.48E+03	1.14E-04	4.90E-03	1.75E-04	3.50E-04
120127	Anthracene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.57E+03	2.52E+06	9.50E+06	1.30E-04	15	1.84E+04	1.26E-05	5.43E-04	1.75E-04	1.60E-03
C5-C8	C5-C8 Aliphatics	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	9.83E+04	2.52E+06	9.50E+06	1.30E-04	15	NA	6.48E-01	2.79E+01	1.75E-04	3.84E-04
C9-C12	C9-C12 Aliphatics	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	6.11E+04	2.52E+06	9.50E+06	1.30E-04	15	NA	7.90E-01	3.38E+01	1.75E-04	3.64E-04
C9-C10	C9-C10 Aromatics	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	4.31E+05	2.52E+06	9.50E+06	1.30E-04	15	NA	3.96E-03	1.70E-01	1.75E-04	3.89E-04
C9-C18	C9-C18 Aliphatics	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	6.04E+06	2.52E+06	9.50E+06	1.30E-04	15	NA	8.28E-01	3.56E+01	1.75E-04	3.64E-04
C11-C22	C11-C22 Aromatics	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	4.10E+06	2.52E+06	9.50E+06	1.30E-04	15	NA	3.80E-04	1.55E-02	1.75E-04	4.27E-04

Appendix C.4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Child Recreational Scenario - RME
Southwest Properties, Wells G&H Superfund Site, Operable
Whitney Barrel

Chemical CAS No. (numbers only, no dashes)	Chemical	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Soil-water partition coefficient, K_d (cm^3/g)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pef) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
95636	Trimethylbenzene, 1,2,4-	1	15	7.43E+00	N/A	0.10	2.74E+01	4.77E-04	1.23E+03	2.75E+303	1.08E-05	N/A	N/A	6.0E-03
540590	Dichloroethylene, 1,2- (total)	1	15	2.57E-01	N/A	0.10	2.74E+01	3.77E-04	1.23E+03	#NUM!	1.08E-05	N/A	#N/A	#N/A
108678	Trimethylbenzene, 1,3,5-	1	15	3.34E+00	N/A	0.10	2.74E+01	3.95E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	6.0E-03
104518	n-Butylbenzene	1	15	5.02E+00	N/A	0.10	2.74E+01	4.41E-04	1.23E+03	#NUM!	1.08E-05	N/A	#N/A	#N/A
91203	Naphthalene	1	15	4.00E+00	4.27E+03	0.10	2.74E+01	4.70E-04	1.23E+03	9.67E+307	1.08E-05	4.61E-02	N/A	3.0E-03
99876	Isopropyltoluene, 4-	1	15	3.16E+00	N/A	0.10	2.74E+01	4.39E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	4.0E-01
135988	Butylbenzene, sec-	1	15	6.22E+01	N/A	0.10	2.74E+01	4.66E-04	1.23E+03	5.47E+297	1.08E-05	N/A	#N/A	#N/A
74873	Chloromethane	1	15	2.66E-02	3.24E+05	0.10	2.74E+01	7.66E-04	1.23E+03	1.14E+189	1.08E-05	3.51E+00	N/A	9.0E-02
75014	Vinyl chloride	1	15	3.72E-02	6.48E+05	0.10	2.74E+01	6.44E-04	1.23E+03	5.27E+224	1.08E-05	8.99E+00	8.8E-06	1.0E-01
74839	Bromomethane	1	15	2.66E-02	N/A	0.10	2.74E+01	4.48E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	5.0E-03
75003	Ethyl Chloride	1	15	2.66E-02	1.12E+05	0.10	2.74E+01	7.68E-04	1.23E+03	1.14E+189	1.08E-05	1.21E+00	N/A	1.0E+01
75354	1,1-Dichloroethylene	1	15	1.18E-01	2.04E+05	0.10	2.74E+01	5.47E-04	1.23E+03	3.62E+264	1.08E-05	2.21E+00	N/A	2.0E-01
76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	1	15	4.50E-01	N/A	0.10	2.74E+01	1.75E-04	1.23E+03	#NUM!	1.07E-05	N/A	N/A	3.0E+01
67641	Acetone	1	15	1.15E-03	1.37E+09	0.10	2.74E+01	2.07E-03	1.23E+03	9.18E+69	1.09E-05	1.48E-02	N/A	N/A
75150	Carbon Disulfide	1	15	1.03E-01	N/A	0.10	2.74E+01	6.34E-04	1.23E+03	1.25E+228	1.08E-06	N/A	N/A	7.0E-01
79209	Methyl Acetate	1	15	6.64E-03	N/A	0.10	2.74E+01	6.61E-04	1.23E+03	1.17E+188	1.08E-05	N/A	#N/A	#N/A
75092	Methylene chloride	1	15	2.34E-02	1.60E+05	0.10	2.74E+01	6.35E-04	1.23E+03	8.55E+227	1.08E-05	1.73E+00	4.7E-07	3.0E+00
156606	trans-1,2-Dichloroethylene	1	15	1.05E-01	8.20E+04	0.10	2.74E+01	4.32E-04	1.23E+03	#NUM!	1.08E-05	8.85E-01	N/A	2.0E-01
1634044	Methyl-Tertiary-Butyl Ether	1	15	7.68E-02	4.68E+03	0.10	2.74E+01	6.67E-04	1.23E+03	9.48E+216	1.08E-05	4.96E-02	N/A	3.0E+00
75343	1,1-Dichloroethane	1	15	6.32E-02	1.62E+05	0.10	2.74E+01	4.58E-04	1.23E+03	#NUM!	1.08E-05	1.75E+00	N/A	5.0E-01
156592	cis-1,2-Dichloroethylene	1	15	7.10E-02	5.68E+04	0.10	2.74E+01	4.58E-04	1.23E+03	#NUM!	1.08E-05	6.12E-01	N/A	2.0E-01
78933	Butanone, 2- (MEK)	1	15	7.68E-03	N/A	0.10	2.74E+01	9.45E-04	1.23E+03	1.18E+153	1.08E-05	N/A	N/A	N/A
71556	1,1,1-Trichloroethane	1	15	2.20E-01	N/A	0.10	2.74E+01	4.75E-04	1.23E+03	4.36E+304	1.08E-05	N/A	N/A	2.2E+00
110827	Cyclohexane	1	15	3.20E-01	N/A	0.10	2.74E+01	4.85E-04	1.23E+03	3.16E+268	1.08E-05	N/A	#N/A	#N/A
71432	Benzene	1	15	1.18E-01	7.41E+04	0.10	2.74E+01	5.42E-04	1.23E+03	1.61E+267	1.08E-05	8.02E-01	7.8E-06	3.0E-02
79016	Trichloroethylene	1	15	3.32E-01	1.09E+05	0.10	2.74E+01	4.83E-04	1.23E+03	3.77E+299	1.08E-05	1.18E+00	1.1E-04	4.0E-02
108872	Methyl cyclohexane	1	15	5.38E-01	3.35E+06	0.10	2.74E+01	5.98E-04	1.23E+03	1.50E+242	1.08E-05	3.62E+01	N/A	3.0E+00
108883	Toluene	1	15	3.64E-01	1.28E+05	0.10	2.74E+01	5.34E-04	1.23E+03	1.10E+271	1.08E-05	1.38E+00	N/A	4.0E-01
127184	Tetrachloroethylene	1	15	3.10E-01	9.19E+04	0.10	2.74E+01	4.39E-04	1.23E+03	#NUM!	1.08E-05	9.92E-01	5.9E-06	N/A
108907	Chlorobenzene	1	15	4.38E-01	3.21E+04	0.10	2.74E+01	4.55E-04	1.23E+03	#NUM!	1.08E-05	3.48E-01	N/A	5.0E-02
100414	Ethylbenzene	1	15	7.26E-01	2.68E+04	0.10	2.74E+01	4.60E-04	1.23E+03	#NUM!	1.08E-05	2.90E-01	N/A	1.0E+00
1330207	Xylenes	1	15	4.82E-01	N/A	0.10	2.74E+01	3.75E-03	1.23E+03	4.03E+35	1.09E-05	N/A	N/A	1.0E-01
100425	Styrene	1	15	1.55E+00	N/A	0.10	2.74E+01	4.47E-04	1.23E+03	#NUM!	1.08E-05	N/A	#N/A	#N/A
98828	Isopropylbenzene	1	15	1.86E+01	N/A	0.10	2.74E+01	3.95E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	4.0E-01
79345	1,1,2,2-Tetrachloroethane	1	15	1.67E-01	N/A	0.10	2.74E+01	5.65E-04	1.23E+03	1.08E+258	1.08E-05	N/A	#N/A	#N/A
541731	Dichlorobenzene, 1,3-	1	15	3.40E-01	3.19E+04	0.10	2.74E+01	2.56E-04	1.23E+03	#NUM!	1.07E-05	3.42E-01	N/A	N/A
106467	1,4-Dichlorobenzene	1	15	1.23E+00	6.66E+03	0.10	2.74E+01	4.38E-04	1.23E+03	#NUM!	1.08E-05	7.19E-02	N/A	8.0E-01
95501	1,2-Dichlorobenzene	1	15	1.07E-01	3.84E+00	0.10	2.74E+01	3.84E-02	1.23E+03	4.74E+03	1.09E-05	4.28E-05	N/A	N/A
120821	1,2,4-Trichlorobenzene	1	15	3.56E+00	N/A	0.10	2.74E+01	2.25E-04	1.23E+03	#NUM!	1.07E-05	N/A	N/A	2.0E-01
100527	Benzaldehyde	1	15	6.64E-02	N/A	0.10	2.74E+01	1.35E-03	1.23E+03	2.60E+107	1.08E-05	N/A	#N/A	#N/A
91576	Methylnaphthalene, 2-	1	15	1.70E+01	1.20E+04	0.10	2.74E+01	3.13E-04	1.23E+03	#NUM!	1.08E-05	1.29E-01	N/A	3.0E-03
92524	Biphenyl, 1,1'-	1	15	1.23E+01	N/A	0.10	2.74E+01	3.15E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	N/A
208968	Acenaphthylene	1	15	9.57E+00	4.31E+02	0.10	2.74E+01	3.36E-04	1.23E+03	#NUM!	1.08E-05	4.64E-03	N/A	3.0E-03
83329	Acenaphthene	1	15	1.42E+01	N/A	0.10	2.74E+01	7.33E-04	1.23E+03	2.13E+197	1.08E-05	N/A	N/A	3.0E-03
132649	Dibenzofuran	1	15	1.83E+01	1.64E+04	0.10	2.74E+01	1.66E-04	1.23E+03	#NUM!	1.07E-05	1.75E-01	N/A	N/A
86737	Fluorene	1	15	1.54E+01	N/A	0.10	2.74E+01	8.18E-01	1.23E+03	1.50E+00	3.24E-05	N/A	N/A	3.0E-03
85018	Phenanthrene	1	15	2.63E+01	6.27E+03	0.10	2.74E+01	3.50E-04	1.23E+03	#NUM!	1.08E-05	6.76E-02	N/A	3.0E-03
120127	Anthracene	1	15	5.90E+01	N/A	0.10	2.74E+01	1.60E-03	1.23E+03	5.14E+80	1.08E-05	N/A	N/A	3.0E-03
C5-C8	C5-C8 Aliphatics	1	15	4.53E+00	3.84E+08	0.10	2.74E+01	3.84E-04	1.23E+03	#NUM!	1.08E-05	4.14E+03	N/A	2.0E-01
C9-C12	C9-C12 Aliphatics	1	15	3.00E+02	6.76E+06	0.10	2.74E+01	3.64E-04	1.23E+03	#NUM!	1.08E-05	7.28E+01	N/A	2.0E-01
C9-C10	C9-C10 Aromatics	1	15	3.56E+00	1.95E+07	0.10	2.74E+01	3.69E-04	1.23E+03	#NUM!	1.08E-05	2.10E+02	N/A	5.0E-02
C9-C18	C9-C18 Aliphatics	1	15	1.36E+03	1.56E+08	0.10	2.74E+01	3.64E-04	1.23E+03	#NUM!	1.08E-05	1.70E+03	N/A	2.0E-01
C11-C22	C11-C22 Aromatics	1	15	1.00E+01	6.23E+06	0.10	2.74E+01	4.27E-04	1.23E+03	#NUM!	1.08E-05	6.72E+01	N/A	5.0E-02

Appendix C.4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Child Recreational Scenario - RME
Southwest Properties, Wells G&H Superfund Site, Operable Unit 2
Whitney Barrel

RISK-BASED SOIL CONCENTRATION CALCULATIONS:

INCREMENTAL RISK CALCULATIONS:

Chemical CAS No. (numbers only, no dashes)	Chemical	Indoor exposure soil conc., carcinogen (µg/kg)	Indoor exposure soil conc., noncarcinogen (µg/kg)	Risk-based indoor exposure soil conc., (µg/kg)	Soil saturation conc., C_{sat} (µg/kg)	Final indoor exposure soil conc., (µg/kg)	Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
95636	Trimethylbenzene, 1,2,4-	NA	NA	NA	4.38E+05	NA	NA	NA
540590	Dichloroethylene, 1,2- (total)	NA	NA	NA	6.96E+02	NA	NA	NA
108678	Trimethylbenzene, 1,3,5-	NA	NA	NA	7.13E+04	NA	NA	NA
104518	n-Butylbenzene	NA	NA	NA	6.53E+03	NA	NA	NA
91203	Naphthalene	NA	NA	NA	1.30E+05	NA	NA	3.4E-04
99876	Isopropyltoluene, 4-	NA	NA	NA	7.11E+05	NA	NA	NA
135988	Butylbenzene, sec-	NA	NA	NA	1.10E+06	NA	NA	NA
74873	Chloromethane	NA	NA	NA	1.37E+06	NA	NA	6.7E-04
75014	Vinyl chloride	NA	NA	NA	8.33E+05	NA	1.2E-07	1.6E-03
74839	Bromomethane	NA	NA	NA	3.89E+06	NA	NA	NA
75003	Ethyl Chloride	NA	NA	NA	1.37E+06	NA	NA	2.7E-06
75354	1,1-Dichloroethylene	NA	NA	NA	6.39E+05	NA	NA	2.6E-04
76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	NA	NA	NA	3.99E+05	NA	NA	NA
67641	Acetone	NA	NA	NA	2.01E+08	NA	NA	NA
75150	Carbon Disulfide	NA	NA	NA	8.78E+05	NA	NA	NA
79209	Methyl Acetate	NA	NA	NA	5.03E+07	NA	NA	NA
75092	Methylene chloride	NA	NA	NA	2.95E+06	NA	1.8E-09	1.3E-05
156605	trans-1,2-Dichloroethylene	NA	NA	NA	2.12E+06	NA	NA	9.8E-05
1634044	Methyl-Tertiary-Butyl Ether	NA	NA	NA	1.42E+07	NA	NA	3.7E-07
75343	1,1-Dichloroethane	NA	NA	NA	1.39E+06	NA	NA	7.8E-05
156592	cis-1,2-Dichloroethylene	NA	NA	NA	9.75E+05	NA	NA	6.6E-05
78933	Butanone, 2- (MEK)	NA	NA	NA	4.63E+07	NA	NA	NA
71556	1,1,1-Trichloroethane	NA	NA	NA	6.01E+05	NA	NA	NA
110827	Cyclohexane	NA	NA	NA	3.88E+05	NA	NA	NA
71432	Benzene	NA	NA	NA	5.74E+05	NA	1.2E-08	5.9E-04
79016	Trichloroethylene	NA	NA	NA	6.05E+05	NA	2.5E-07	6.6E-04
108872	Methyl cyclohexane	NA	NA	NA	2.96E+04	NA	NA	2.7E-04
108883	Toluene	NA	NA	NA	3.02E+05	NA	NA	7.7E-05
127184	Tetrachloroethylene	NA	NA	NA	1.06E+05	NA	1.1E-08	NA
108907	Chlorobenzene	NA	NA	NA	3.04E+05	NA	NA	1.3E-04
100414	Ethylbenzene	NA	NA	NA	1.56E+05	NA	NA	6.5E-06
1330207	Xylenes	NA	NA	NA	1.50E+05	NA	NA	NA
100425	Styrene	NA	NA	NA	6.44E+05	NA	NA	NA
98828	Isopropylbenzene	NA	NA	NA	1.06E+06	NA	NA	NA
79345	1,1,2,2-Tetrachloroethane	NA	NA	NA	1.15E+06	NA	NA	NA
541731	Dichlorobenzene, 1,3-	NA	NA	NA	3.82E+04	NA	NA	NA
106467	1,4-Dichlorobenzene	NA	NA	NA	1.06E+05	NA	NA	2.0E-06
95501	1,2-Dichlorobenzene	NA	NA	NA	8.50E+05	NA	NA	NA
120821	1,2,4-Trichlorobenzene	NA	NA	NA	1.13E+06	NA	NA	NA
100527	Benzaldehyde	NA	NA	NA	1.74E+06	NA	NA	NA
91576	Methylnaphthalene, 2-	NA	NA	NA	4.24E+05	NA	NA	9.6E-04
92524	Biphenyl, 1,1'-	NA	NA	NA	5.81E+04	NA	NA	NA
208968	Acenaphthylene	NA	NA	NA	3.84E+04	NA	NA	3.4E-05
83329	Acenaphthene	NA	NA	NA	5.09E+04	NA	NA	NA
132649	Dibenzofuran	NA	NA	NA	1.85E+05	NA	NA	NA
86737	Fluorene	NA	NA	NA	2.97E+04	NA	NA	NA
85018	Phenanthrene	NA	NA	NA	3.64E+04	NA	NA	5.0E-04
120127	Anthracene	NA	NA	NA	2.57E+03	NA	NA	NA
C5-C8	C5-C8 Aliphatics	NA	NA	NA	7.86E+07	NA	NA	4.6E-01
C9-C12	C9-C12 Aliphatics	NA	NA	NA	2.12E+07	NA	NA	8.1E-03
C9-C10	C9-C10 Aromatics	NA	NA	NA	1.92E+06	NA	NA	9.3E-02
C9-C18	C9-C18 Aliphatics	NA	NA	NA	1.36E+07	NA	NA	1.9E-01
C11-C22	C11-C22 Aromatics	NA	NA	NA	6.92E+07	NA	NA	3.0E-02

	95% UCL Cancer Risk	95% UCL HI
TOTAL:	4E-07	7.9E-01

= Cancer risk > 1E-05 or HQ/HI>1E+00

Trimethylbenzene, 1,2,4-	MESSAGE: Soil conc. >= saturation (Csat), Risk/HQ calculated at Csat.
Dichloroethylene, 1,2- (total)	MESSAGE: Soil conc. >= saturation (Csat), Risk/HQ calculated at Csat.
Trimethylbenzene, 1,3,5-	MESSAGE: Soil conc. >= saturation (Csat), Risk/HQ calculated at Csat.
n-Butylbenzene	MESSAGE: Soil conc. >= saturation (Csat), Risk/HQ calculated at Csat.
Naphthalene	
Isopropyltoluene, 4-	MESSAGE: Soil conc. >= saturation (Csat), Risk/HQ calculated at Csat.
Butylbenzene, sec-	MESSAGE: Soil conc. >= saturation (Csat), Risk/HQ calculated at Csat.
Chloromethane	
Vinyl chloride	
Bromomethane	MESSAGE: Soil conc. >= saturation (Csat), Risk/HQ calculated at Csat.
Ethyl Chloride	
1,1-Dichloroethylene	
Trichloro-1,2,2-trifluoroethane, 1,1,2-	MESSAGE: Soil conc. >= saturation (Csat), Risk/HQ calculated at Csat.
Acetone	
Carbon Disulfide	MESSAGE: Soil conc. >= saturation (Csat), Risk/HQ calculated at Csat.
Methyl Acetate	MESSAGE: Soil conc. >= saturation (Csat), Risk/HQ calculated at Csat.
Methylene chloride	
trans-1,2-Dichloroethylene	
Methyl-Tertiary-Butyl Ether	
1,1-Dichloroethane	
cis-1,2-Dichloroethylene	
Butanone, 2- (MEK)	MESSAGE: Soil conc. >= saturation (Csat), Risk/HQ calculated at Csat.
1,1,1-Trichloroethane	MESSAGE: Soil conc. >= saturation (Csat), Risk/HQ calculated at Csat.
Cyclohexane	MESSAGE: Soil conc. >= saturation (Csat), Risk/HQ calculated at Csat.
Benzene	
Trichloroethylene	

Appendix C.4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Child Recreational Scenario - CT
Southwest Properties, Wells G&H Superfund Site, Operable Unit 2
Whitney Barrel

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box) — SL-SCREEN Version 2.3, 03/01

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [X]

ENTER Chemical CAS No. (numbers only, no dashes)	Chemical	Enter initial soil concentration. ENTER Mean soil conc., C_R (µg/kg)	ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Depth below grade to top of contamination, L_1 (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	Note	ENTER User-defined vadose zone soil vapor permeability, k_v (cm²)	ENTER Vadose zone soil dry bulk density, ρ_b^d (g/cm³)	ENTER Vadose zone soil total porosity, n^v (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^v (cm³/cm³)	ENTER Vadose zone soil organic carbon fraction, f_{oc}^v (unitless)	ENTER Averaging time for carcinogens, ATC (yrs)	ENTER Averaging time for noncarcinogens, ATNC (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure time, ET (hrs/day)	ENTER Conversion factor, CF (mg/g)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
95636	Trimethylbenzene, 1,2,4-		15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
540590	Dichloroethylene, 1,2- (total)		15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
108678	Trimethylbenzene, 1,3,5-		15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
104518	n-Butylbenzene		15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
91203	Naphthalene	2.74E+03	15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
99876	Isopropyltoluene, 4-		15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
135988	Butylbenzene, sec-		15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
74873	Chloromethane	2.49E+02	15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
75014	Vinyl chloride	2.61E+02	15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
74839	Bromomethane		15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
75003	Ethyl Chloride	8.60E+01	15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
75354	1,1-Dichloroethylene	6.34E+01	15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
76131	Trichloro-1,2,2-trifluoroethane, 1,1,2,		15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
67641	Acetone	3.24E+02	15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
75150	Carbon Disulfide		15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
79209	Methyl Acetate		15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
75092	Methylene chloride	7.27E+02	15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
156605	trans-1,2-Dichloroethylene	7.73E+01	15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
1634044	Methyl-Tertiary-Butyl Ether	6.75E+01	15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
75343	1,1-Dichloroethane	3.58E+02	15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
156592	cis-1,2-Dichloroethylene	1.80E+02	15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
78933	Butanone, 2- (MEK)		15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
71556	1,1,1-Trichloroethane		15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
110827	Cyclohexane		15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
71432	Benzene	8.08E+01	15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
79016	Trichloroethylene	2.81E+02	15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
108872	Methyl cyclohexane	4.45E+02	15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
108883	Toluene	3.86E+02	15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
127184	Tetrachloroethylene	1.47E+02	15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
108907	Chlorobenzene	3.11E+02	15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
100414	Ethylbenzene	1.84E+02	15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
1330207	Xylenes		15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
100425	Styrene		15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
98828	Isopropylbenzene		15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
79345	1,1,2,2-Tetrachloroethane		15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
541731	Dichlorobenzene, 1,3-	1.09E+02	15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
106467	1,4-Dichlorobenzene	2.80E+02	15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
95501	1,2-Dichlorobenzene	5.10E+01	15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
120821	1,2,4-Trichlorobenzene		15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
100527	Benzaldehyde		15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
91576	Methylnaphthalene, 2-	5.41E+03	15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
92524	Biphenyl, 1,1'-		15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
208968	Acenaphthylene	4.00E+02	15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
83329	Acenaphthene		15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
132649	Dibenzofuran	1.79E+03	15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
86737	Fluorene		15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
85018	Phenanthrene	3.86E+04	15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
120127	Anthracene		15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
C5-C8	C5-C8 Aliphatics	9.63E+04	15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
C9-C12	C9-C12 Aliphatics	5.11E+04	15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
C9-C10	C9-C10 Aromatics	4.31E+06	15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
C9-C18	C9-C18 Aliphatics	9.25E+06	15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1
C11-C22	C11-C22 Aromatics	9.24E+06	15	15	10	LS		1		1.5	0.43	0.3	0.002	70	2	2	25	2.5	8760	1.0E-06	1

Note:
1) Default soil parameters from table 7 of User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings (U.S. EPA June 18, 2003) were used for soil water filled porosity (θ_w), soil organic carbon fraction (f_{oc}), soil total porosity (n), and soil dry bulk density (ρ_b).

Appendix C.4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Child Recreational Scenario - CT
Southwest Prperties, Wells G&H Superfund Site, Operable Unit 2
Whitney Barrel

Chemical CAS No. (numbers only, no dashes)	Chemical	Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)	Physical state at soil temperature, (S,L,G)
95636	Trimethylbenzene, 1,2,4-	7.80E-02	9.03E-06	5.70E-03	25	1.25E+03	442.30	649.11	3.72E+03	5.70E+01	N/A	6.0E-03	L
540590	Dichloroethylene, 1,2- (total)	5.59E-02	6.47E-06	4.30E-04	20	1.32E+03	585.00	877.50	1.28E+02	1.30E+00	#N/A	#N/A	0.0E+00
108678	Trimethylbenzene, 1,3,5-	6.48E-02	7.86E-06	7.81E-03	25	1.25E+03	442.30	649.11	1.67E+03	2.00E+01	N/A	6.0E-03	L
104518	n-Butylbenzene	7.25E-02	8.39E-06	1.25E-02	25	1.23E+03	456.00	684.00	2.51E+03	1.26E+00	#N/A	#N/A	L
91203	Naphthalene	5.90E-02	7.50E-06	4.83E-04	25	1.04E+04	491.14	748.40	2.00E+03	3.10E+01	N/A	3.0E-03	S
99876	Isopropyltoluene, 4-	7.25E-02	8.39E-06	8.60E+00	25	1.24E+03	450.10	652.04	1.58E+03	2.34E+01	N/A	4.0E-01	L
135988	Butylbenzene, sec-	8.00E-02	8.00E-06	1.67E-02	25	1.24E+03	446.65	669.98	3.11E+04	1.76E+01	#N/A	#N/A	0.0E+00
74873	Chloromethane	1.26E-01	6.50E-06	8.67E-03	25	1.35E+03	249.00	373.50	1.43E+01	5.32E+03	N/A	9.0E-02	0.0E+00
75014	Vinyl chloride	1.06E-01	1.23E-05	2.71E-02	25	5.25E+03	259.25	432.00	1.86E+01	2.76E+03	8.8E-06	1.0E-01	L
74839	Bromomethane	7.28E-02	1.21E-05	6.22E-03	25	5.49E+03	276.50	414.75	1.43E+01	1.52E+04	N/A	5.0E-03	0.0E+00
75003	Ethyl Chloride	1.26E-01	6.50E-06	8.67E-03	25	1.36E+03	249.00	373.50	1.43E+01	5.32E+03	N/A	1.0E+01	L
75354	1,1-Dichloroethylene	9.00E-02	1.04E-05	2.61E-02	25	6.25E+03	304.75	576.05	5.89E+01	2.25E+03	N/A	2.0E-01	L
76131	Trichloro-1,2,2-triflouroethane, 1,1,2-	2.68E-02	8.07E-06	5.17E-01	25	1.33E+03	320.70	481.05	2.25E+02	1.70E+02	N/A	3.0E+01	0.0E+00
67641	Acetone	1.24E-01	1.14E-05	3.88E-05	25	6.96E+03	329.20	508.10	5.75E-01	1.00E+06	N/A	N/A	L
75150	Carbon Disulfide	1.04E-01	1.29E-05	1.27E-02	25	6.39E+03	319.00	552.00	5.14E+01	2.67E+03	N/A	7.0E-01	L
79209	Methyl Acetate	1.04E-01	1.00E-05	1.13E-04	25	1.31E+03	365.00	547.50	3.32E+00	2.43E+05	#N/A	#N/A	0.0E+00
75092	Methylene chloride	1.01E-01	1.17E-05	2.19E-03	25	6.71E+03	313.00	510.00	1.17E+01	1.30E+04	4.7E-07	3.0E+00	L
156605	trans-1,2-Dichloroethylene	7.07E-02	1.19E-05	9.39E-03	25	1.33E+03	320.85	516.50	5.25E+01	6.30E+03	N/A	2.0E-01	L
1634044	Methyl-Tertiary-Butyl Ether	1.02E-01	1.05E-05	5.87E-04	25	1.32E+03	328.36	497.11	3.84E+01	5.10E+04	N/A	3.0E+00	L
75343	1,1-Dichloroethane	7.42E-02	1.05E-05	5.61E-03	25	6.90E+03	330.55	523.00	3.16E+01	5.06E+03	N/A	5.0E-01	L
156592	cis-1,2-Dichloroethylene	7.36E-02	1.13E-05	4.07E-03	25	7.19E+03	333.65	544.00	3.55E+01	3.50E+03	N/A	2.0E-01	L
78933	Butanone, 2- (MEK)	8.08E-02	9.80E-06	5.60E-05	25	1.31E+03	352.50	528.75	3.83E+00	2.23E+05	N/A	N/A	0.0E+00
71556	1,1,1-Trichloroethane	7.80E-02	8.80E-06	1.72E-02	25	7.14E+03	347.24	545.00	1.10E+02	1.33E+03	N/A	2.2E+00	L
110827	Cyclohexane	8.00E-02	9.00E-06	2.00E+00	25	1.31E+03	353.85	530.78	1.60E+02	5.50E+01	#N/A	#N/A	0.0E+00
71432	Benzene	8.80E-02	9.80E-06	5.56E-03	25	7.34E+03	353.24	562.16	5.89E+01	1.75E+03	7.8E-06	3.0E-02	L
79016	Trichloroethylene	7.90E-02	9.10E-06	1.03E-02	25	7.51E+03	360.36	544.20	1.66E+02	1.10E+03	1.1E-04	4.0E-02	L
108872	Methyl cyclohexane	9.86E-02	8.52E-06	4.23E-01	25	1.30E+03	373.90	560.85	2.88E+02	1.40E+01	N/A	3.0E+00	L
108883	Toluene	8.70E-02	8.60E-06	6.63E-03	25	7.93E+03	383.78	591.79	1.82E+02	5.26E+02	N/A	4.0E-01	L
127184	Tetrachloroethylene	7.20E-02	8.20E-06	1.84E-02	25	8.29E+03	394.40	620.20	1.55E+02	2.00E+02	5.9E-06	N/A	L
108907	Chlorobenzene	7.30E-02	8.70E-06	3.71E-03	25	8.41E+03	404.87	632.40	2.19E+02	4.72E+02	N/A	6.0E-02	L
100414	Ethylbenzene	7.50E-02	7.80E-06	7.88E-03	25	8.50E+03	409.34	617.20	3.63E+02	1.69E+02	N/A	1.0E+00	L
1330207	Xylenes	7.69E-02	8.44E-06	6.73E-06	25	1.26E+03	417.40	616.21	2.41E+02	2.20E+02	N/A	1.0E-01	L
100425	Styrene	7.10E-02	8.00E-06	2.76E-03	25	8.74E+03	418.31	636.00	7.76E+02	3.10E+02	#N/A	#N/A	L
98828	Isopropylbenzene	6.50E-02	7.83E-06	1.47E-02	25	1.26E+03	425.40	631.01	9.31E+03	5.60E+01	N/A	4.0E-01	L
79345	1,1,2,2-Tetrachloroethane	7.10E-02	7.90E-06	3.44E-04	25	9.00E+03	419.60	661.15	9.33E+01	2.97E+03	#N/A	#N/A	L
541731	Dichlorobenzene, 1,3-	4.14E-02	8.85E-06	4.70E-03	25	1.24E+03	446.00	683.96	1.70E+02	6.88E+01	N/A	N/A	L
106467	1,4-Dichlorobenzene	6.90E-02	7.90E-06	2.43E-03	25	9.27E+03	447.21	684.75	6.17E+02	7.38E+01	N/A	8.0E-01	S
95501	1,2-Dichlorobenzene	6.86E-02	9.41E-06	1.62E-06	25	9.70E+03	465.00	697.50	5.34E+01	2.77E+04	N/A	N/A	S
120821	1,2,4-Trichlorobenzene	3.00E-02	8.23E-06	1.42E-03	25	1.05E+04	486.15	725.00	1.78E+03	3.00E+02	N/A	2.0E-01	L
100527	Benzaldehyde	7.30E-02	9.07E-06	2.62E-05	25	1.24E+03	452.00	678.00	3.27E+01	6.57E+03	#N/A	#N/A	0.0E+00
91576	Methylnaphthalene, 2-	4.84E-02	7.75E-06	1.01E-03	25	1.17E+03	514.05	761.01	8.51E+03	2.46E+01	N/A	3.0E-03	S
92524	Biphenyl, 1,1'-	4.04E-02	8.15E-06	3.03E-04	25	1.15E+03	529.10	793.65	6.25E+03	6.94E+00	N/A	N/A	0.0E+00
208968	Acenaphthylene	4.43E-02	7.44E-06	2.80E-04	25	1.12E+03	553.00	792.01	4.79E+03	3.93E+00	N/A	3.0E-03	S
83329	Acenaphthene	4.21E-02	7.69E-06	1.55E-04	25	1.22E+04	550.54	803.15	7.08E+03	4.24E+00	N/A	3.0E-03	S
132649	Dibenzofuran	2.67E-02	5.93E-06	4.00E-03	25	1.11E+03	559.00	824.01	8.13E+03	1.00E+01	N/A	N/A	S
86737	Fluorene	3.63E-02	7.88E-06	9.41E-06	25	1.27E+04	570.44	870.00	7.71E+03	1.90E+00	N/A	3.0E-03	S
85018	Phenanthrene	3.30E-02	7.47E-06	1.30E-04	25	1.06E+03	613.00	869.01	1.41E+04	1.28E+00	N/A	3.0E-03	S
120127	Anthracene	3.24E-02	7.74E-06	6.51E-05	25	1.31E+04	615.18	873.00	2.95E+04	4.34E-02	N/A	3.0E-03	S
C5-C8	C5-C8 Aliphatics	6.00E-02	1.00E-05	1.30E+00	25	NA	NA	NA	2.27E+03	1.10E+04	N/A	2.0E-01	S
C9-C12	C9-C12 Aliphatics	6.00E-02	1.00E-05	1.56E+00	25	NA	NA	NA	1.50E+05	7.00E+01	N/A	2.0E-01	S
C9-C10	C9-C10 Aromatics	6.00E-02	1.00E-05	7.92E-03	25	NA	NA	NA	1.78E+03	5.10E+04	N/A	5.0E-02	S
C9-C18	C9-C18 Aliphatics	6.00E-02	1.00E-05	1.66E+00	25	NA	NA	NA	6.80E+05	1.00E+01	N/A	2.0E-01	S
C11-C22	C11-C22 Aromatics	6.00E-02	1.00E-05	7.32E-04	25	NA	NA	NA	5.00E+03	5.60E+03	N/A	5.0E-02	S

Appendix C.4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Child Recreational Scenario - CT
Southwest Properties, Wells G&H Superfund Site, Operable Unit 2
Whitney Barrel

Chemical CAS No. (numbers only, no dashes)	Chemical	Source-building separation, LT (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_e (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, Xcrack (cm)	Initial soil concentration used, CR (µg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,ts}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, HTS (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)
95636	Trimethylbenzene, 1,2,4-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	4.36E+05	2.52E+06	9.50E+06	1.30E-04	15	1.55E+03	4.96E-03	2.13E-01	1.75E-04	4.77E-04
540590	Dichloroethylene, 1,2- (total)	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.96E+02	2.52E+06	9.50E+06	1.30E-04	15	1.73E+03	3.87E-04	1.67E-02	1.75E-04	3.77E-04
108678	Trimethylbenzene, 1,3,5-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	7.13E+04	2.52E+06	9.50E+06	1.30E-04	15	1.55E+03	6.60E-03	2.93E-01	1.75E-04	3.96E-04
104518	n-Butylbenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	6.63E+03	2.52E+06	9.50E+06	1.30E-04	15	1.53E+03	1.09E-02	4.89E-01	1.75E-04	4.41E-04
91203	Naphthalene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.74E+03	2.52E+06	9.50E+06	1.30E-04	15	1.28E+04	1.52E-04	6.55E-03	1.75E-04	4.70E-04
99876	Isopropyltoluene, 4-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	7.31E+05	2.52E+06	9.50E+06	1.30E-04	15	1.57E+03	7.48E+00	3.22E+02	1.75E-04	4.39E-04
135988	Butylbenzene, sec-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.10E+06	2.52E+06	9.50E+06	1.30E-04	15	1.53E+03	1.46E-02	6.27E-01	1.75E-04	4.88E-04
74873	Chloromethane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.49E+02	2.52E+06	9.50E+06	1.30E-04	15	1.20E+03	7.79E-03	3.35E-01	1.75E-04	7.66E-04
75014	Vinyl chloride	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.61E+02	2.52E+06	9.50E+06	1.30E-04	15	5.00E+03	1.73E-02	7.46E-01	1.75E-04	6.44E-04
74839	Bromomethane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.69E+06	2.52E+06	9.50E+06	1.30E-04	15	5.39E+03	3.84E-03	1.65E-01	1.75E-04	4.48E-04
75003	Ethyl Chloride	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	8.60E+01	2.52E+06	9.50E+06	1.30E-04	15	1.20E+03	7.78E-03	3.35E-01	1.75E-04	7.66E-04
75354	1,1-Dichloroethylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	8.34E+01	2.52E+06	9.50E+06	1.30E-04	15	6.39E+03	1.47E-02	6.34E-01	1.75E-04	5.47E-04
76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.99E+05	2.52E+06	9.50E+06	1.30E-04	15	1.44E+03	4.55E-01	1.96E+01	1.75E-04	1.75E-04
67641	Acetone	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.24E+02	2.52E+06	9.50E+06	1.30E-04	15	7.56E+03	1.97E-05	8.50E-04	1.75E-04	2.07E-03
75150	Carbon Disulfide	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	8.78E+05	2.52E+06	9.50E+06	1.30E-04	15	6.68E+03	6.99E-03	3.01E-01	1.75E-04	6.34E-04
79209	Methyl Acetate	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.03E+07	2.52E+06	9.50E+06	1.30E-04	15	1.50E+03	9.86E-05	4.25E-03	1.75E-04	8.61E-04
75092	Methylene chloride	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	7.27E+02	2.52E+06	9.50E+06	1.30E-04	15	7.03E+03	1.17E-03	5.03E-02	1.75E-04	6.35E-04
156605	trans-1,2-Dichloroethylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	7.73E+01	2.52E+06	9.50E+06	1.30E-04	15	1.42E+03	8.27E-03	3.56E-01	1.75E-04	4.32E-04
1634044	Methyl-Tertiary-Butyl Ether	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.75E+01	2.52E+06	9.50E+06	1.30E-04	15	1.45E+03	5.16E-04	2.22E-02	1.75E-04	6.67E-04
75343	1,1-Dichloroethane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.58E+02	2.52E+06	9.50E+06	1.30E-04	15	7.45E+03	2.88E-03	1.24E-01	1.75E-04	4.58E-04
156592	cis-1,2-Dichloroethylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.80E+02	2.52E+06	9.50E+06	1.30E-04	15	7.73E+03	2.04E-03	8.77E-02	1.75E-04	4.59E-04
78933	Butanone, 2- (MEK)	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	4.83E+07	2.52E+06	9.50E+06	1.30E-04	15	1.49E+03	4.90E-05	2.11E-03	1.75E-04	9.45E-04
71556	1,1,1-Trichloroethane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	8.01E+05	2.52E+06	9.50E+06	1.30E-04	15	7.88E+03	8.50E-03	3.66E-01	1.75E-04	4.76E-04
110827	Cyclohexane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.88E+05	2.52E+06	9.50E+06	1.30E-04	15	1.49E+03	1.75E+00	7.54E+01	1.75E-04	4.85E-04
71432	Benzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	8.08E+01	2.52E+06	9.50E+06	1.30E-04	15	8.12E+03	2.69E-03	1.16E-01	1.75E-04	5.42E-04
79016	Trichloroethylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.91E+02	2.52E+06	9.50E+06	1.30E-04	15	8.56E+03	4.79E-03	2.06E-01	1.75E-04	4.83E-04
108872	Methyl cyclohexane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	4.45E+02	2.52E+06	9.50E+06	1.30E-04	15	1.51E+03	3.70E-01	1.59E+01	1.75E-04	5.98E-04
108883	Toluene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.85E+02	2.52E+06	9.50E+06	1.30E-04	15	9.16E+03	2.82E-03	1.20E-01	1.75E-04	5.34E-04
127184	Tetrachloroethylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.47E+02	2.52E+06	9.50E+06	1.30E-04	15	9.55E+03	7.83E-03	3.37E-01	1.75E-04	4.39E-04
108907	Chlorobenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.11E+02	2.52E+06	9.50E+06	1.30E-04	15	9.80E+03	1.54E-03	6.65E-02	1.75E-04	4.56E-04
100414	Ethylbenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.84E+02	2.52E+06	9.50E+06	1.30E-04	15	1.02E+04	3.18E-03	1.37E-01	1.75E-04	4.60E-04
1330207	Xylenes	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.60E+06	2.52E+06	9.50E+06	1.30E-04	15	1.54E+03	5.88E-06	2.52E-04	1.75E-04	3.75E-03
100425	Styrene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.44E+05	2.52E+06	9.50E+06	1.30E-04	15	1.06E+04	1.08E-03	4.67E-02	1.75E-04	4.47E-04
98828	Isopropylbenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.06E+06	2.52E+06	9.50E+06	1.30E-04	15	1.54E+03	1.28E-02	5.51E-01	1.75E-04	3.99E-04
79345	1,1,2,2-Tetrachloroethane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.15E+06	2.52E+06	9.50E+06	1.30E-04	15	1.05E+04	1.34E-04	5.77E-03	1.75E-04	5.66E-04
541731	Dichlorobenzene, 1,3-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.00E+02	2.52E+06	9.50E+06	1.30E-04	15	1.50E+03	4.11E-03	1.77E-01	1.75E-04	2.56E-04
106467	1,4-Dichlorobenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.50E+02	2.52E+06	9.50E+06	1.30E-04	15	1.12E+04	8.89E-04	3.83E-02	1.75E-04	4.38E-04
95501	1,2-Dichlorobenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.10E+01	2.52E+06	9.50E+06	1.30E-04	15	1.21E+04	5.51E-07	2.37E-05	1.75E-04	3.84E-02
120821	1,2,4-Trichlorobenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.13E+06	2.52E+06	9.50E+06	1.30E-04	15	1.32E+04	4.35E-04	1.87E-02	1.75E-04	2.26E-04
100527	Benzaldehyde	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.74E+06	2.52E+06	9.50E+06	1.30E-04	15	1.53E+03	2.29E-05	9.84E-04	1.75E-04	1.35E-03
91576	Methylnaphthalene, 2-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.41E+03	2.52E+06	9.50E+06	1.30E-04	15	1.51E+03	8.86E-04	3.81E-02	1.75E-04	3.13E-04
92524	Biphenyl, 1,1'-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	8.81E+04	2.52E+06	9.50E+06	1.30E-04	15	1.47E+03	2.66E-04	1.14E-02	1.75E-04	3.15E-04
208968	Acenaphthylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	4.00E+02	2.52E+06	9.50E+06	1.30E-04	15	1.51E+03	2.45E-04	1.05E-02	1.75E-04	3.38E-04
83329	Acenaphthene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	6.09E+04	2.52E+06	9.50E+06	1.30E-04	15	1.61E+04	3.67E-05	1.58E-03	1.75E-04	7.33E-04
132649	Dibenzofuran	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.79E+03	2.52E+06	9.50E+06	1.30E-04	15	1.47E+03	3.61E-03	1.51E-01	1.75E-04	1.66E-04
86737	Fluorene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.87E+04	2.52E+06	9.50E+06	1.30E-04	15	1.62E+04	2.20E-06	9.48E-07	1.75E-04	8.18E-01
85018	Phenanthrene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.64E+04	2.52E+06	9.50E+06	1.30E-04	15	1.48E+03	1.14E-04	4.80E-03	1.75E-04	3.50E-04
120127	Anthracene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.57E+03	2.52E+06	9.50E+06	1.30E-04	15	1.84E+04	1.26E-05	5.43E-04	1.75E-04	1.60E-03
C5-C8	C5-C8 Aliphatics	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	9.83E+04	2.52E+06	9.50E+06	1.30E-04	15	NA	6.48E-01	2.79E+01	1.75E-04	3.64E-04
C9-C12	C9-C12 Aliphatics	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	6.11E+04	2.52E+06	9.50E+06	1.30E-04	15	NA	7.80E-01	3.36E+01	1.75E-04	3.64E-04
C9-C10	C9-C10 Aromatics	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	4.31E+05	2.52E+06	9.50E+06	1.30E-04	15	NA	3.96E-03	1.70E-01	1.75E-04	3.69E-04
C9-C16	C9-C16 Aliphatics	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	9.25E+05	2.52E+06	9.50E+06	1.30E-04	15	NA	8.28E-01	3.56E+01	1.75E-04	3.64E-04
C11-C22	C11-C22 Aromatics	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	9.24E+05	2.52E+06	9.50E+06	1.30E-04	15	NA	3.69E-04	1.56E-02	1.75E-04	4.27E-04

Appendix C.4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Child Recreational Scenario - CT
Southwest Properties, Wells G&H Superfund Site, Operable
Whitney Barrel

Chemical CAS No. (numbers only, no dashes)	Chemical	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Soil-water partition coefficient, K_s (cm^3/g)	Source vapor conc., C_{source} (ug/m^3)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pef) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (ug/m^3)	Unit risk factor, URF $(ug/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
95636	Trimethylbenzene, 1,2,4-	1	15	7.43E+00	N/A	0.10	2.74E+01	4.77E-04	1.23E+03	2.75E+309	1.08E-05	N/A	N/A	6.0E-03
540590	Dichloroethylene, 1,2- (total)	1	15	2.57E-01	N/A	0.10	2.74E+01	3.77E-04	1.23E+03	#NUM!	1.08E-05	N/A	#N/A	#N/A
108678	Trimethylbenzene, 1,3,5-	1	15	3.34E+00	N/A	0.10	2.74E+01	3.96E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	6.0E-03
104518	n-Butylbenzene	1	15	5.02E+00	N/A	0.10	2.74E+01	4.41E-04	1.23E+03	#NUM!	1.08E-05	N/A	#N/A	#N/A
91203	Naphthalene	1	15	4.00E+00	4.27E+03	0.10	2.74E+01	4.70E-04	1.23E+03	9.67E+307	1.08E-05	4.61E-02	N/A	3.0E-03
99876	Isopropyltoluene, 4-	1	15	3.18E+00	N/A	0.10	2.74E+01	4.39E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	4.0E-01
135988	Butylbenzene, sec-	1	15	6.22E+01	N/A	0.10	2.74E+01	4.86E-04	1.23E+03	5.47E+297	1.08E-05	N/A	#N/A	#N/A
74873	Chloromethane	1	15	2.86E-02	3.24E+06	0.10	2.74E+01	7.65E-04	1.23E+03	1.14E+189	1.08E-05	3.51E+00	N/A	9.0E-02
75014	Vinyl chloride	1	15	3.72E-02	6.48E+05	0.10	2.74E+01	6.44E-04	1.23E+03	5.27E+224	1.08E-05	6.89E+00	8.8E-06	1.0E-01
74839	Bromomethane	1	15	2.86E-02	N/A	0.10	2.74E+01	4.48E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	5.0E-03
75003	Ethyl Chloride	1	15	2.86E-02	1.12E+06	0.10	2.74E+01	7.65E-04	1.23E+03	1.14E+189	1.08E-05	1.21E+00	N/A	1.0E+01
75354	1,1-Dichloroethylene	1	15	1.18E-01	1.08E+05	0.10	2.74E+01	5.47E-04	1.23E+03	3.62E+264	1.08E-05	1.17E+00	N/A	2.0E-01
76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	1	15	4.50E-01	N/A	0.10	2.74E+01	1.75E-04	1.23E+03	#NUM!	1.07E-05	N/A	N/A	3.0E+01
67641	Acetone	1	15	1.15E-03	1.37E+03	0.10	2.74E+01	2.07E-03	1.23E+03	9.18E+69	1.09E-05	1.48E-02	N/A	N/A
75150	Carbon Disulfide	1	15	1.03E-01	N/A	0.10	2.74E+01	6.34E-04	1.23E+03	1.25E+228	1.08E-05	N/A	N/A	7.0E-01
79209	Methyl Acetate	1	15	6.84E-03	N/A	0.10	2.74E+01	8.81E-04	1.23E+03	1.17E+168	1.08E-05	N/A	#N/A	#N/A
75092	Methylene chloride	1	15	2.34E-02	1.60E+05	0.10	2.74E+01	6.35E-04	1.23E+03	8.55E+227	1.08E-05	1.73E+00	4.7E-07	3.0E+00
156605	trans-1,2-Dichloroethylene	1	15	1.05E-01	8.20E+04	0.10	2.74E+01	4.32E-04	1.23E+03	#NUM!	1.08E-05	8.85E-01	N/A	2.0E-01
1634044	Methyl-Tertiary-Butyl Ether	1	15	7.68E-02	4.58E+03	0.10	2.74E+01	6.87E-04	1.23E+03	9.48E+216	1.08E-05	4.99E-02	N/A	3.0E+00
75343	1,1-Dichloroethane	1	15	6.32E-02	1.62E+05	0.10	2.74E+01	4.58E-04	1.23E+03	#NUM!	1.08E-05	1.75E+00	N/A	5.0E-01
156592	cis-1,2-Dichloroethylene	1	15	7.10E-02	5.86E+04	0.10	2.74E+01	4.69E-04	1.23E+03	#NUM!	1.08E-05	6.12E-01	N/A	2.0E-01
78933	Butanone, 2- (MEK)	1	15	7.66E-03	N/A	0.10	2.74E+01	9.45E-04	1.23E+03	1.18E+153	1.08E-05	N/A	N/A	N/A
71556	1,1,1-Trichloroethane	1	15	2.20E-01	N/A	0.10	2.74E+01	4.75E-04	1.23E+03	4.36E+304	1.08E-05	N/A	N/A	2.2E+00
110827	Cyclohexane	1	15	3.20E-01	N/A	0.10	2.74E+01	4.85E-04	1.23E+03	3.16E+296	1.08E-05	N/A	#N/A	#N/A
71432	Benzene	1	15	1.18E-01	2.65E+04	0.10	2.74E+01	5.42E-04	1.23E+03	1.61E+267	1.08E-05	3.08E-01	7.8E-06	3.0E-02
79016	Trichloroethylene	1	15	3.32E-01	1.09E+05	0.10	2.74E+01	4.83E-04	1.23E+03	3.77E+299	1.08E-05	1.18E+00	1.1E-04	4.0E-02
108872	Methyl cyclohexane	1	15	5.36E-01	3.35E+06	0.10	2.74E+01	5.98E-04	1.23E+03	1.50E+242	1.08E-05	3.82E+01	N/A	3.0E+00
108883	Toluene	1	15	3.84E-01	1.28E+05	0.10	2.74E+01	5.34E-04	1.23E+03	1.10E+271	1.08E-05	1.39E+00	N/A	4.0E-01
127184	Tetrachloroethylene	1	15	3.10E-01	9.19E+04	0.10	2.74E+01	4.39E-04	1.23E+03	#NUM!	1.08E-05	9.92E-01	5.9E-06	N/A
108907	Chlorobenzene	1	15	4.38E-01	3.21E+04	0.10	2.74E+01	4.65E-04	1.23E+03	#NUM!	1.08E-05	3.48E-01	N/A	5.0E-02
100414	Ethylbenzene	1	15	7.29E-01	2.88E+04	0.10	2.74E+01	4.60E-04	1.23E+03	#NUM!	1.08E-05	2.90E-01	N/A	1.0E+00
1330207	Xylenes	1	15	4.82E-01	N/A	0.10	2.74E+01	3.75E-03	1.23E+03	4.03E+38	1.09E-05	N/A	N/A	1.0E-01
100425	Styrene	1	15	1.55E+00	N/A	0.10	2.74E+01	4.47E-04	1.23E+03	#NUM!	1.08E-05	N/A	#N/A	#N/A
98828	Isopropylbenzene	1	15	1.86E+01	N/A	0.10	2.74E+01	3.95E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	4.0E-01
79345	1,1,2,2-Tetrachloroethane	1	15	1.67E-01	N/A	0.10	2.74E+01	5.65E-04	1.23E+03	1.98E+258	1.08E-05	N/A	#N/A	#N/A
541731	Dichlorobenzene, 1,3-	1	15	3.40E-01	3.19E+04	0.10	2.74E+01	2.56E-04	1.23E+03	#NUM!	1.07E-05	3.42E-01	N/A	N/A
106467	1,4-Dichlorobenzene	1	15	1.23E+00	6.88E+03	0.10	2.74E+01	4.35E-04	1.23E+03	#NUM!	1.08E-05	7.19E-02	N/A	8.0E-01
95501	1,2-Dichlorobenzene	1	15	1.07E-01	3.94E+00	0.10	2.74E+01	3.94E-02	1.23E+03	4.74E+03	1.09E-05	4.28E-05	N/A	N/A
120821	1,2,4-Trichlorobenzene	1	15	3.55E+00	N/A	0.10	2.74E+01	2.25E-04	1.23E+03	#NUM!	1.07E-05	N/A	N/A	2.0E-01
100527	Benzaldehyde	1	15	6.54E-02	N/A	0.10	2.74E+01	1.35E-03	1.23E+03	2.60E+107	1.09E-05	N/A	#N/A	#N/A
91578	Methylnaphthalene, 2-	1	15	1.70E+01	1.20E+04	0.10	2.74E+01	3.13E-04	1.23E+03	#NUM!	1.08E-05	1.29E-01	N/A	3.0E-03
92524	Biphenyl, 1,1'-	1	15	1.25E+01	N/A	0.10	2.74E+01	3.15E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	N/A
208968	Acenaphthylene	1	15	9.57E+00	4.31E+02	0.10	2.74E+01	3.38E-04	1.23E+03	#NUM!	1.08E-05	4.64E-03	N/A	3.0E-03
83329	Acenaphthene	1	15	1.42E+01	N/A	0.10	2.74E+01	7.33E-04	1.23E+03	2.13E+197	1.08E-05	N/A	N/A	3.0E-03
132649	Dibenzofuran	1	15	1.83E+01	1.84E+04	0.10	2.74E+01	1.66E-04	1.23E+03	#NUM!	1.07E-05	1.75E-01	N/A	N/A
86737	Fluorene	1	15	1.54E+01	N/A	0.10	2.74E+01	6.16E-01	1.23E+03	1.50E+00	3.24E-05	N/A	N/A	3.0E-03
85018	Phenanthrene	1	15	2.83E+01	6.27E+03	0.10	2.74E+01	3.50E-04	1.23E+03	#NUM!	1.08E-05	6.76E-02	N/A	3.0E-03
120127	Anthracene	1	15	5.90E+01	N/A	0.10	2.74E+01	1.80E-03	1.23E+03	5.14E+90	1.08E-05	N/A	N/A	3.0E-03
C5-C8	C5-C8 Aliphatics	1	15	4.53E+00	3.84E+05	0.10	2.74E+01	3.84E-04	1.23E+03	#NUM!	1.08E-05	4.14E+03	N/A	2.0E-01
C9-C12	C9-C12 Aliphatics	1	15	3.00E+02	6.76E+06	0.10	2.74E+01	3.84E-04	1.23E+03	#NUM!	1.08E-05	7.29E+01	N/A	2.0E-01
C9-C10	C9-C10 Aromatics	1	15	3.58E+00	1.95E+07	0.10	2.74E+01	3.68E-04	1.23E+03	#NUM!	1.08E-05	2.10E+02	N/A	5.0E-02
C9-C18	C9-C18 Aliphatics	1	15	1.36E+03	2.42E+07	0.10	2.74E+01	3.84E-04	1.23E+03	#NUM!	1.08E-05	2.61E+02	N/A	2.0E-01
C11-C22	C11-C22 Aromatics	1	15	1.00E+01	1.40E+06	0.10	2.74E+01	4.27E-04	1.23E+03	#NUM!	1.08E-05	1.51E+01	N/A	5.0E-02

Appendix C.4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Child Recreational Scenario - CT
Southwest Properties, Wells G&H Superfund Site, Operable Unit 2
Whitney Barrel

RISK-BASED SOIL CONCENTRATION CALCULATIONS:

INCREMENTAL RISK CALCULATIONS:

Chemical CAS No. (numbers only, no dashes)	Chemical	Indoor exposure soil conc., carcinogen (µg/kg)	Indoor exposure soil conc., noncarcinogen (µg/kg)	Risk-based indoor exposure soil conc., (µg/kg)	Soil saturation conc., C_{sat} (µg/kg)	Final indoor exposure soil conc., (µg/kg)	Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
95636	Trimethylbenzene, 1,2,4-	NA	NA	NA	4.36E+05	NA	NA	NA
540590	Dichloroethylene, 1,2- (total)	NA	NA	NA	5.99E+02	NA	NA	NA
108678	Trimethylbenzene, 1,3,5-	NA	NA	NA	7.13E+04	NA	NA	NA
104518	n-Butylbenzene	NA	NA	NA	6.63E+03	NA	NA	NA
91203	Naphthalene	NA	NA	NA	1.30E+05	NA	NA	1.1E-04
99876	Isopropyltoluene, 4-	NA	NA	NA	7.31E+03	NA	NA	NA
135988	Butylbenzene, sec-	NA	NA	NA	1.10E+04	NA	NA	NA
74873	Chloromethane	NA	NA	NA	1.37E+06	NA	NA	2.9E-04
75014	Vinyl chloride	NA	NA	NA	8.33E+05	NA	1.3E-06	5.2E-04
74839	Bromomethane	NA	NA	NA	3.69E+06	NA	NA	NA
75003	Ethyl Chloride	NA	NA	NA	1.37E+06	NA	NA	9.0E-07
75354	1,1-Dichloroethylene	NA	NA	NA	8.39E+05	NA	NA	4.3E-05
76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	NA	NA	NA	3.99E+05	NA	NA	NA
67641	Acetone	NA	NA	NA	2.01E+06	NA	NA	NA
75150	Carbon Disulfide	NA	NA	NA	8.76E+05	NA	NA	NA
79209	Methyl Acetate	NA	NA	NA	5.03E+07	NA	NA	NA
75092	Methylene chloride	NA	NA	NA	2.98E+06	NA	1.7E-10	4.3E-06
156605	trans-1,2-Dichloroethylene	NA	NA	NA	2.12E+06	NA	NA	3.1E-06
1634044	Methyl-Tertiary-Butyl Ether	NA	NA	NA	1.42E+07	NA	NA	1.2E-07
75343	1,1-Dichloroethane	NA	NA	NA	1.39E+06	NA	NA	2.6E-05
156592	cis-1,2-Dichloroethylene	NA	NA	NA	9.75E+05	NA	NA	2.3E-05
78933	Butanone, 2- (MEK)	NA	NA	NA	4.83E+07	NA	NA	NA
71556	1,1,1-Trichloroethane	NA	NA	NA	8.01E+05	NA	NA	NA
110827	Cyclohexane	NA	NA	NA	3.88E+05	NA	NA	NA
71432	Benzene	NA	NA	NA	5.74E+05	NA	5.1E-10	7.8E-05
79016	Trichloroethylene	NA	NA	NA	6.05E+05	NA	2.7E-08	2.2E-04
108872	Methyl cyclohexane	NA	NA	NA	2.98E+04	NA	NA	9.0E-05
108883	Toluene	NA	NA	NA	3.02E+05	NA	NA	2.6E-05
127184	Tetrachloroethylene	NA	NA	NA	1.06E+05	NA	1.2E-09	NA
108907	Chlorobenzene	NA	NA	NA	3.04E+05	NA	NA	4.3E-05
100414	Ethylbenzene	NA	NA	NA	1.56E+05	NA	NA	2.2E-06
1330207	Xylenes	NA	NA	NA	1.50E+05	NA	NA	NA
100425	Styrene	NA	NA	NA	3.44E+05	NA	NA	NA
98828	Isopropylbenzene	NA	NA	NA	1.06E+06	NA	NA	NA
79345	1,1,2,2-Tetrachloroethane	NA	NA	NA	1.15E+05	NA	NA	NA
541731	Dichlorobenzene, 1,3-	NA	NA	NA	3.62E+04	NA	NA	NA
106467	1,4-Dichlorobenzene	NA	NA	NA	1.05E+05	NA	NA	6.7E-07
95501	1,2-Dichlorobenzene	NA	NA	NA	8.50E+06	NA	NA	NA
120821	1,2,4-Trichlorobenzene	NA	NA	NA	1.13E+06	NA	NA	NA
100527	Benzaldehyde	NA	NA	NA	1.74E+06	NA	NA	NA
91576	Methylnaphthalene, 2-	NA	NA	NA	4.24E+05	NA	NA	3.2E-04
92524	Biphenyl, 1,1-	NA	NA	NA	5.81E+04	NA	NA	NA
208968	Acenaphthylene	NA	NA	NA	3.54E+04	NA	NA	1.1E-05
83329	Acenaphthene	NA	NA	NA	5.09E+04	NA	NA	NA
132649	Dibenzofuran	NA	NA	NA	1.65E+05	NA	NA	NA
86737	Fluorene	NA	NA	NA	2.97E+04	NA	NA	NA
85018	Phenanthrene	NA	NA	NA	3.64E+04	NA	NA	1.7E-04
120127	Anthracene	NA	NA	NA	2.57E+03	NA	NA	NA
C5-C8	C5-C8 Aliphatics	NA	NA	NA	7.35E+07	NA	NA	1.5E-01
C9-C12	C9-C12 Aliphatics	NA	NA	NA	2.12E+07	NA	NA	2.7E-03
C9-C10	C9-C10 Aromatics	NA	NA	NA	1.82E+06	NA	NA	3.1E-03
C9-C18	C9-C18 Aliphatics	NA	NA	NA	1.36E+07	NA	NA	9.7E-03
C11-C22	C11-C22 Aromatics	NA	NA	NA	5.82E+07	NA	NA	2.2E-03

	95% UCL Cancer Risk	95% UCL HI
TOTAL:	4E-08	2.0E-01

= Cancer risk > 1E-05 or HQ/HI>1E+00

Trimethylbenzene, 1,2,4-	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
Dichloroethylene, 1,2- (total)	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
Trimethylbenzene, 1,3,5-	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
n-Butylbenzene	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
Naphthalene	
Isopropyltoluene, 4-	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
Butylbenzene, sec-	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
Chloromethane	
Vinyl chloride	
Bromomethane	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
Ethyl Chloride	
1,1-Dichloroethylene	
Trichloro-1,2,2-trifluoroethane, 1,1,2-	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
Acetone	
Carbon Disulfide	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
Methyl Acetate	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
Methylene chloride	
trans-1,2-Dichloroethylene	
Methyl-Tertiary-Butyl Ether	
1,1-Dichloroethane	
cis-1,2-Dichloroethylene	
Butanone, 2- (MEK)	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
1,1,1-Trichloroethane	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
Cyclohexane	MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat.
Benzene	
Trichloroethylene	

Attachment C-6
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Adult Recreational Scenario - RME
Southwest Properties, Wells GAH Superfund Site, Operable Unit 2
Whitney Barrel

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

SL-SCREEN
Version 2.3; 03/01

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES X

ENTER Chemical CAS No. (numbers only, no dashes)	Chemical	Enter initial soil concentration. ENTER Mean soil conc. OR (ug/kg)	ENTER Depth below grade to bottom of enclosed space floor, L_B (15 or 200 cm)	ENTER Depth below grade to top of contamination, L_1 (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Vadose zone SCS soil type used to estimate soil vapor permeability	OR	Note	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^A (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Vadose zone soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Averaging time for carcinogens, ATC (yrs)	ENTER Averaging time for noncarcinogens, ATNC (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure time ET (hrs/day)	ENTER Conversion factor CF (hr/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
95636	Trimethylbenzene, 1,2,4-		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
540866	Dichloroethylene, 1,2- (total)		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
108678	Trimethylbenzene, 1,3,5-		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
104518	n-Butylbenzene		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
91203	Naphthalene	2.74E+03	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
99876	Isopropyltoluene, 4-		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
135988	Butylbenzene, sec-		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
74873	Chloromethane	2.49E+02	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
75014	Vinyl chloride	2.81E+02	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
74839	Bromomethane		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
75003	Ethyl Chloride	5.80E+01	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
75354	1,1-Dichloroethylene	1.20E+02	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
67641	Acetone	3.24E+02	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
75150	Carbon Disulfide		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
79209	Methyl Acetate		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
75092	Methylene chloride	7.27E+02	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
156605	trans-1,2-Dichloroethylene	7.73E+01	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
1634044	Methyl-Tertiary-Butyl Ether	5.75E+01	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
75343	1,1-Dichloroethane	3.56E+02	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
156592	cis-1,2-Dichloroethylene	1.90E+02	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
78933	Butanone, 2- (MEK)		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
71556	1,1,1-Trichloroethane		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
110827	Cyclohexane		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
71432	Benzene	2.10E+02	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
79016	Trichloroethylene	2.91E+02	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
108872	Methyl cyclohexane	4.45E+02	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
108883	Toluene	5.85E+02	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
127184	Tetrachloroethylene	1.47E+02	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
108907	Chlorobenzene	3.11E+02	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
100414	Ethylbenzene	1.84E+02	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
1330207	Xylenes		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
100425	Styrene		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
98828	Isopropylbenzene		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
79345	1,1,2,2-Tetrachloroethane		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
541731	Dichlorobenzene, 1,3-	1.00E+02	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
106467	1,4-Dichlorobenzene	2.50E+02	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
95501	1,2-Dichlorobenzene	5.10E+01	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
120821	1,2,4-Trichlorobenzene		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
100527	Benzaldehyde		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
91576	Methylnaphthalene, 2-	5.41E+05	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
92524	Biphenyl, 1,1'-		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
208968	Acenaphthylene	4.00E+02	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
83329	Acenaphthene		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
132649	Dibenzofuran	1.72E+03	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
86737	Fluorene		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
85018	Phenanthrene	3.56E+04	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
120127	Anthracene		15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
C5-C8	C5-C8 Aliphatics	9.83E+04	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
C9-C12	C9-C12 Aliphatics	5.11E+04	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
C9-C10	C9-C10 Aromatics	4.31E+05	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
C13-C18	C9-C18 Aliphatics	5.04E+06	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1
C11-C22	C11-C22 Aromatics	4.10E+06	15	15	10	LS	1			1.5	0.43	0.3	0.002	70	24	24	78	2.5	8760	1.0E-06	1

Note:
1) Default soil parameters from table 7 of User's Guide for Evaluating Subsurface Vapor Intrusion into Building (U.S. EPA June 19, 2003) were used for soil water filled porosity (θ_w), soil organic carbon fraction (f_{oc}), soil total porosity (n), and soil dry bulk density (ρ_b).

Appendix C.4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Adult Recreational Scenario - RME
Southwest Prperties, Wells G&H Superfund Site, Operable Unit 2
Whitney Barrel

Chemical CAS No. (numbers only, no dashes)	Chemical	Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)	Physical state at soil temperature, (S,L,G)
95636	Trimethylbenzene, 1,2,4-	7.80E-02	9.03E-06	5.70E-03	25	1.25E+03	442.30	649.11	3.72E+03	5.70E+01	N/A	6.0E-03	L
540590	Dichloroethylene, 1,2- (total)	5.59E-02	6.47E-06	4.30E-04	20	1.32E+03	585.00	877.50	1.28E+02	1.30E+00	#N/A	#N/A	0.0E+00
108678	Trimethylbenzene, 1,3,5-	6.48E-02	7.86E-06	7.81E-03	25	1.25E+03	442.30	649.11	1.67E+03	2.00E+01	N/A	6.0E-03	L
104518	n-Butylbenzene	7.25E-02	8.39E-06	1.25E-02	25	1.23E+03	456.00	684.00	2.51E+03	1.26E+00	#N/A	#N/A	L
91203	Naphthalene	5.90E-02	7.50E-06	4.83E-04	25	1.04E+04	491.14	748.40	2.00E+03	3.10E+01	N/A	3.0E-03	S
99876	Isopropyltoluene, 4-	7.25E-02	8.39E-06	8.60E+00	25	1.24E+03	450.10	652.04	1.58E+03	2.34E+01	N/A	4.0E-01	L
135988	Butylbenzene, sec-	8.00E-02	8.00E-06	1.67E-02	25	1.24E+03	446.65	669.98	3.11E+04	1.76E+01	#N/A	#N/A	0.0E+00
74873	Chloromethane	1.26E-01	6.50E-06	8.67E-03	25	1.35E+03	249.00	373.50	1.43E+01	5.32E+03	N/A	9.0E-02	0.0E+00
75014	Vinyl chloride	1.06E-01	1.23E-05	2.71E-02	25	5.25E+03	259.25	432.00	1.86E+01	2.76E+03	8.8E-06	1.0E-01	L
74839	Bromomethane	7.28E-02	1.21E-05	6.22E-03	25	5.49E+03	276.50	414.75	1.43E+01	1.52E+04	N/A	5.0E-03	0.0E+00
75003	Ethyl Chloride	1.26E-01	6.50E-06	8.67E-03	25	1.36E+03	249.00	373.50	1.43E+01	5.32E+03	N/A	1.0E+01	L
75354	1,1-Dichloroethylene	9.00E-02	1.04E-05	2.61E-02	25	6.25E+03	304.75	576.05	5.89E+01	2.25E+03	N/A	2.0E-01	L
76131	Trichloro-1,2,2-triflouroethane, 1,1,2-	2.88E-02	8.07E-06	5.17E-01	25	1.33E+03	320.70	481.05	2.25E+02	1.70E+02	N/A	3.0E+01	0.0E+00
67641	Acetone	1.24E-01	1.14E-05	3.88E-05	25	6.96E+03	329.20	508.10	5.75E-01	1.00E+06	N/A	N/A	L
75150	Carbon Disulfide	1.04E-01	1.29E-05	1.27E-02	25	6.39E+03	319.00	552.00	5.14E+01	2.67E+03	N/A	7.0E-01	L
79209	Methyl Acetate	1.04E-01	1.00E-05	1.13E-04	25	1.31E+03	365.00	547.50	3.32E+00	2.43E+05	#N/A	#N/A	0.0E+00
75092	Methylene chloride	1.01E-01	1.17E-05	2.19E-03	25	6.71E+03	313.00	510.00	1.17E+01	1.30E+04	4.7E-07	3.0E+00	L
156605	trans-1,2-Dichloroethylene	7.07E-02	1.19E-05	9.39E-03	25	1.33E+03	320.85	516.50	5.25E+01	6.30E+03	N/A	2.0E-01	L
1634044	Methyl-Tertiary-Butyl Ether	1.02E-01	1.05E-05	5.87E-04	25	1.32E+03	328.36	497.11	3.84E+01	5.10E+04	N/A	3.0E+00	L
75343	1,1-Dichloroethane	7.42E-02	1.05E-05	5.61E-03	25	6.90E+03	330.55	523.00	3.16E+01	5.06E+03	N/A	5.0E-01	L
156592	cis-1,2-Dichloroethylene	7.36E-02	1.13E-05	4.07E-03	25	7.19E+03	333.65	544.00	3.55E+01	3.50E+03	N/A	2.0E-01	L
78933	Butanone, 2- (MEK)	8.08E-02	9.80E-06	5.60E-05	25	1.31E+03	352.50	528.75	3.83E+00	2.23E+05	N/A	N/A	0.0E+00
71556	1,1,1-Trichloroethane	7.80E-02	8.80E-06	1.72E-02	25	7.14E+03	347.24	545.00	1.10E+02	1.33E+03	N/A	2.2E+00	L
110827	Cyclohexane	8.00E-02	9.00E-06	2.00E+00	25	1.31E+03	353.85	530.78	1.60E+02	5.50E+01	#N/A	#N/A	0.0E+00
71432	Benzene	8.80E-02	9.80E-06	5.56E-03	25	7.34E+03	353.24	562.16	5.89E+01	1.75E+03	7.8E-06	3.0E-02	L
79016	Trichloroethylene	7.90E-02	9.10E-06	1.03E-02	25	7.51E+03	360.36	544.20	1.66E+02	1.10E+03	1.1E-04	4.0E-02	L
108872	Methyl cyclohexane	9.86E-02	8.52E-06	4.23E-01	25	1.30E+03	373.90	560.85	2.68E+02	1.40E+01	N/A	3.0E+00	L
108883	Toluene	8.70E-02	8.60E-06	6.63E-03	25	7.93E+03	383.78	591.79	1.82E+02	5.26E+02	N/A	4.0E-01	L
127184	Tetrachloroethylene	7.20E-02	8.20E-06	1.84E-02	25	8.29E+03	394.40	620.20	1.55E+02	2.00E+02	5.9E-06	N/A	L
108907	Chlorobenzene	7.30E-02	8.70E-06	3.71E-03	25	8.41E+03	404.87	632.40	2.19E+02	4.72E+02	N/A	6.0E-02	L
100414	Ethylbenzene	7.50E-02	7.80E-06	7.88E-03	25	8.50E+03	409.34	617.20	3.63E+02	1.69E+02	N/A	1.0E+00	L
1330207	Xylenes	7.69E-02	8.44E-06	6.73E-06	25	1.26E+03	417.40	616.21	2.41E+02	2.20E+02	N/A	1.0E-01	L
100425	Styrene	7.10E-02	8.00E-06	2.76E-03	25	8.74E+03	418.31	636.00	7.76E+02	3.10E+02	#N/A	#N/A	L
98828	Isopropylbenzene	6.50E-02	7.83E-06	1.47E-02	25	1.26E+03	425.40	631.01	9.31E+02	5.60E+01	N/A	4.0E-01	L
79345	1,1,2,2-Tetrachloroethane	7.10E-02	7.90E-06	3.44E-04	25	9.00E+03	419.60	661.15	9.33E+01	2.97E+03	#N/A	#N/A	L
541731	Dichlorobenzene, 1,3-	4.14E-02	8.85E-06	4.70E-03	25	1.24E+03	446.00	683.96	1.70E+02	6.88E+01	N/A	N/A	L
106467	1,4-Dichlorobenzene	6.90E-02	7.90E-06	2.43E-03	25	9.27E+03	447.21	684.75	6.17E+02	7.38E+01	N/A	8.0E-01	S
95501	1,2-Dichlorobenzene	6.88E-02	9.41E-06	1.62E-06	25	9.70E+03	465.00	697.50	5.34E+01	2.77E+04	N/A	N/A	S
120821	1,2,4-Trichlorobenzene	3.00E-02	8.23E-06	1.42E-03	25	1.05E+04	486.15	725.00	1.78E+03	3.00E+02	N/A	2.0E-01	L
100527	Benzaldehyde	7.30E-02	9.07E-06	2.62E-05	25	1.24E+03	452.00	678.00	3.27E+01	6.57E+03	#N/A	#N/A	0.0E+00
91576	Methylnaphthalene, 2-	4.84E-02	7.75E-06	1.01E-03	25	1.17E+03	514.05	761.01	8.51E+03	2.46E+01	N/A	3.0E-03	S
92524	Biphenyl, 1,1'-	4.04E-02	8.15E-06	3.03E-04	25	1.15E+03	529.10	793.65	6.25E+03	6.94E+00	N/A	N/A	0.0E+00
208968	Acenaphthylene	4.43E-02	7.44E-06	2.80E-04	25	1.12E+03	553.00	792.01	4.79E+03	3.93E+00	N/A	3.0E-03	S
83329	Acenaphthene	4.21E-02	7.69E-06	1.55E-04	25	1.22E+04	550.54	803.15	7.08E+03	4.24E+00	N/A	3.0E-03	S
132649	Dibenzofuran	2.67E-02	5.93E-06	4.00E-03	25	1.11E+03	559.00	824.01	8.13E+03	1.00E+01	N/A	N/A	S
86737	Fluorene	3.63E-02	7.88E-06	9.41E-06	25	1.27E+04	570.44	870.00	7.71E+03	1.90E+00	N/A	3.0E-03	S
85018	Phenanthrene	3.30E-02	7.47E-06	1.30E-04	25	1.06E+03	613.00	869.01	1.41E+04	1.28E+00	N/A	3.0E-03	S
120127	Anthracene	3.24E-02	7.74E-06	6.51E-05	25	1.31E+04	615.18	873.00	2.95E+04	4.34E-02	N/A	3.0E-03	S
C5-C8	C5-C8 Aliphatics	6.00E-02	1.00E-05	1.30E+00	25	NA	NA	NA	2.27E+03	1.10E+04	N/A	2.0E-01	S
C9-C12	C9-C12 Aliphatics	6.00E-02	1.00E-05	1.56E+00	25	NA	NA	NA	1.50E+05	7.00E+01	N/A	2.0E-01	S
C9-C10	C9-C10 Aromatics	6.00E-02	1.00E-05	7.92E-03	25	NA	NA	NA	1.78E+03	5.10E+04	N/A	5.0E-02	S
C9-C18	C9-C18 Aliphatics	6.00E-02	1.00E-05	1.66E+00	25	NA	NA	NA	6.80E+05	1.00E+01	N/A	2.0E-01	S
C11-C22	C11-C22 Aromatics	6.00E-02	1.00E-05	7.32E-04	25	NA	NA	NA	5.00E+03	5.90E+03	N/A	5.0E-02	S

Appendix C.4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Adult Recreational Scenario - RME
Southwest Properties, Wells G&H Superfund Site, Operable Unit 2
Whitney Barrel

Chemical CAS No. (numbers only, no dashes)	Chemical	Source-building separation, LT (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, Xcrack (cm)	Initial soil concentration used, CR (µg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,ts}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, HTS (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)
95636	Trimethylbenzene, 1,2,4-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	4.36E+05	2.52E+06	9.50E+06	1.30E-04	15	1.55E+03	4.96E-03	2.13E-01	1.75E-04	4.77E-04
540590	Dichloroethylene, 1,2- (total)	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.96E+02	2.52E+06	9.50E+06	1.30E-04	15	1.73E+03	3.87E-04	1.67E-02	1.75E-04	3.77E-04
108678	Trimethylbenzene, 1,3,5-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	7.13E+04	2.52E+06	9.50E+06	1.30E-04	15	1.55E+03	6.80E-03	2.93E-01	1.75E-04	3.95E-04
104518	n-Butylbenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	6.63E+03	2.52E+06	9.50E+06	1.30E-04	15	1.53E+03	1.09E-02	4.69E-01	1.75E-04	4.41E-04
91203	Naphthalene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.74E+03	2.52E+06	9.50E+06	1.30E-04	15	1.29E+04	1.52E-04	6.55E-03	1.75E-04	4.70E-04
99876	Isopropyltoluene, 4-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	7.31E+05	2.52E+06	9.50E+06	1.30E-04	15	1.57E+03	7.48E+00	3.22E+02	1.75E-04	4.39E-04
135988	Butylbenzene, sec-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.10E+06	2.52E+06	9.50E+06	1.30E-04	15	1.53E+03	1.48E-02	6.27E-01	1.76E-04	4.66E-04
74873	Chloromethane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.49E+02	2.52E+06	9.50E+06	1.30E-04	15	1.20E+03	7.79E-03	3.35E-01	1.75E-04	7.66E-04
75014	Vinyl chloride	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.61E+02	2.52E+06	9.50E+06	1.30E-04	15	5.00E+03	1.73E-02	7.48E-01	1.75E-04	8.44E-04
74839	Bromomethane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.69E+06	2.52E+06	9.50E+06	1.30E-04	15	5.39E+03	3.84E-03	1.65E-01	1.75E-04	4.48E-04
75003	Ethyl Chloride	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	8.60E+01	2.52E+06	9.50E+06	1.30E-04	15	1.20E+03	7.78E-03	3.35E-01	1.75E-04	7.66E-04
75354	1,1-Dichloroethylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.20E+02	2.52E+06	9.50E+06	1.30E-04	15	6.39E+03	1.47E-02	6.34E-01	1.75E-04	5.47E-04
76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.99E+05	2.52E+06	9.50E+06	1.30E-04	15	1.44E+03	4.55E-01	1.96E+01	1.75E-04	1.75E-04
67641	Acetone	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.24E+02	2.52E+06	9.50E+06	1.30E-04	15	7.56E+03	1.97E-05	8.50E-04	1.75E-04	2.07E-03
75150	Carbon Disulfide	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	8.78E+05	2.52E+06	9.50E+06	1.30E-04	15	6.68E+03	6.99E-03	3.01E-01	1.75E-04	6.34E-04
79209	Methyl Acetate	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.03E+07	2.52E+06	9.50E+06	1.30E-04	15	1.50E+03	9.88E-05	4.25E-03	1.75E-04	8.61E-04
75092	Methylene chloride	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	7.27E+02	2.52E+06	9.50E+06	1.30E-04	15	7.03E+03	1.17E-03	5.03E-02	1.75E-04	6.35E-04
156605	trans-1,2-Dichloroethylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	7.73E+01	2.52E+06	9.50E+06	1.30E-04	15	1.42E+03	8.27E-03	3.56E-01	1.75E-04	4.32E-04
1634044	Methyl-Tertiary-Butyl Ether	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.75E+01	2.52E+06	9.50E+06	1.30E-04	15	1.45E+03	5.15E-04	2.22E-02	1.75E-04	6.87E-04
75343	1,1-Dichloroethane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.58E+02	2.52E+06	9.50E+06	1.30E-04	15	7.45E+03	2.88E-03	1.24E-01	1.75E-04	4.58E-04
156592	cis-1,2-Dichloroethylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.80E+02	2.52E+06	9.50E+06	1.30E-04	15	7.73E+03	2.04E-03	8.77E-02	1.75E-04	4.59E-04
78933	Butanone, 2- (MEK)	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	4.63E+07	2.52E+06	9.50E+06	1.30E-04	15	1.49E+03	4.90E-05	2.11E-03	1.75E-04	9.45E-04
71556	1,1,1-Trichloroethane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	6.01E+06	2.52E+06	9.50E+06	1.30E-04	15	7.88E+03	8.50E-03	3.66E-01	1.75E-04	4.75E-04
110827	Cyclohexane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.88E+05	2.52E+06	9.50E+06	1.30E-04	15	1.49E+03	1.75E+00	7.54E+01	1.75E-04	4.65E-04
71432	Benzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.10E+02	2.52E+06	9.50E+06	1.30E-04	15	8.12E+03	2.69E-03	1.16E-01	1.75E-04	5.42E-04
79016	Trichloroethylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.91E+02	2.52E+06	9.50E+06	1.30E-04	15	8.58E+03	4.79E-03	2.06E-01	1.75E-04	4.83E-04
108872	Methyl cyclohexane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	4.45E+02	2.52E+06	9.50E+06	1.30E-04	15	1.51E+03	3.70E-01	1.59E+01	1.75E-04	5.98E-04
108883	Toluene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.85E+02	2.52E+06	9.50E+06	1.30E-04	15	9.15E+03	2.92E-03	1.26E-01	1.75E-04	5.34E-04
127184	Tetrachloroethylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.47E+02	2.52E+06	9.50E+06	1.30E-04	15	9.55E+03	7.83E-03	3.37E-01	1.75E-04	4.39E-04
108907	Chlorobenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.11E+02	2.52E+06	9.50E+06	1.30E-04	15	9.80E+03	1.54E-03	6.65E-02	1.75E-04	4.55E-04
100414	Ethylbenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.84E+02	2.52E+06	9.50E+06	1.30E-04	15	1.02E+04	3.18E-03	1.37E-01	1.75E-04	4.60E-04
1330207	Xylenes	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.60E+05	2.52E+06	9.50E+06	1.30E-04	15	1.54E+03	5.98E-06	2.52E-04	1.75E-04	3.75E-03
100425	Styrene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.44E+05	2.52E+06	9.50E+06	1.30E-04	15	1.05E+04	1.06E-03	4.67E-02	1.75E-04	4.47E-04
98828	Isopropylbenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.06E+06	2.52E+06	9.50E+06	1.30E-04	15	1.54E+03	1.28E-02	5.51E-01	1.75E-04	3.95E-04
79345	1,1,2,2-Tetrachloroethane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.15E+06	2.52E+06	9.50E+06	1.30E-04	15	1.05E+04	1.34E-04	5.77E-03	1.75E-04	5.65E-04
541731	Dichlorobenzene, 1,3-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.00E+02	2.52E+06	9.50E+06	1.30E-04	15	1.50E+03	4.11E-03	1.77E-01	1.75E-04	2.58E-04
106467	1,4-Dichlorobenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.50E+02	2.52E+06	9.50E+06	1.30E-04	15	1.12E+04	8.89E-04	3.83E-02	1.75E-04	4.38E-04
95501	1,2-Dichlorobenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.10E+01	2.52E+06	9.50E+06	1.30E-04	15	1.21E+04	5.51E-07	2.37E-05	1.75E-04	3.94E-02
120821	1,2,4-Trichlorobenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.13E+06	2.52E+06	9.50E+06	1.30E-04	15	1.32E+04	4.35E-04	1.87E-02	1.75E-04	2.25E-04
100527	Benzaldehyde	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.74E+06	2.52E+06	9.50E+06	1.30E-04	15	1.63E+03	2.29E-05	9.84E-04	1.75E-04	1.35E-03
91576	Methylnaphthalene, 2-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	6.41E+03	2.52E+06	9.50E+06	1.30E-04	15	1.51E+03	8.86E-04	3.81E-02	1.75E-04	3.13E-04
92524	Biphenyl, 1,1'-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	6.81E+04	2.52E+06	9.50E+06	1.30E-04	15	1.47E+03	2.66E-04	1.14E-02	1.75E-04	3.15E-04
208968	Acenaphthylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	4.00E+02	2.52E+06	9.50E+06	1.30E-04	15	1.61E+03	2.45E-04	1.05E-02	1.75E-04	3.36E-04
83329	Acenaphthene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	6.09E+04	2.52E+06	9.50E+06	1.30E-04	15	1.61E+04	3.67E-06	1.58E-03	1.75E-04	7.33E-04
132649	Dibenzofuran	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.79E+03	2.52E+06	9.50E+06	1.30E-04	15	1.47E+03	3.51E-03	1.51E-01	1.75E-04	4.66E-04
86737	Fluorene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.87E+04	2.52E+06	9.50E+06	1.30E-04	15	1.62E+04	2.20E-08	9.48E-07	1.75E-04	5.16E-01
85018	Phenanthrene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.64E+04	2.52E+06	9.50E+06	1.30E-04	15	1.48E+03	1.14E-04	4.90E-03	1.75E-04	3.50E-04
120127	Anthracene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.57E+03	2.52E+06	9.50E+06	1.30E-04	15	1.84E+04	1.26E-06	5.43E-04	1.75E-04	1.60E-03
C5-C8	C5-C8 Aliphatics	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	9.83E+04	2.52E+06	9.50E+06	1.30E-04	15	NA	8.49E-01	2.79E+01	1.75E-04	3.64E-04
C9-C12	C9-C12 Aliphatics	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	6.11E+04	2.52E+06	9.50E+06	1.30E-04	15	NA	7.60E-01	3.98E+01	1.75E-04	3.64E-04
C9-C10	C9-C10 Aromatics	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	4.31E+05	2.52E+06	9.50E+06	1.30E-04	15	NA	3.98E-03	1.70E-01	1.75E-04	3.69E-04
C9-C16	C9-C16 Aliphatics	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	6.04E+06	2.52E+06	9.50E+06	1.30E-04	15	NA	8.28E-01	3.56E+01	1.75E-04	3.64E-04
C11-C22	C11-C22 Aromatics	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	4.10E+06	2.52E+06	9.50E+06	1.30E-04	15	NA	3.60E-04	1.55E-02	1.75E-04	4.27E-04